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THE DENTAL DIGEST

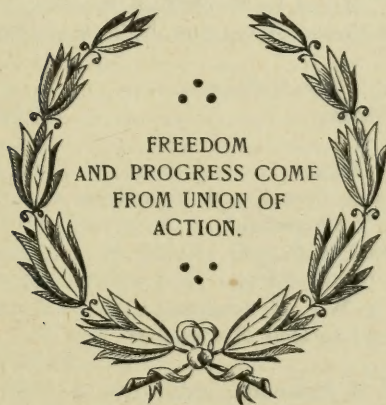
A Monthly Summary of Dental Science Devoted
to the Progress of Dentistry.

THE OFFICIAL ORGAN OF THE

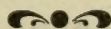
Dental Protective Association

OF THE

UNITED STATES.



VOL. II, JANUARY - DECEMBER, 1896.



PUBLISHED BY
J. N. CROUSE, D. D. S.
CHICAGO, ILL.

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The Dental Digest.

Vol. II.

CHICAGO, JANUARY, 1896.

No. 1.

Original Contributions.

A GOLD BANDAGE AS A MEANS OF SAVING TEETH.

BY DR. J. F. ADAMS, WORCESTER, READ BEFORE THE UNION MEETING OF THE NEW ENGLAND AND CONN. VALLEY DENTAL SOCIETIES, AT WORCESTER, OCT. 23-25, 1895.

This device has not had the test of long use to establish its value, nor has it been applied in a large number of cases, but from the experience I have had of its practical working I feel warranted in offering it to the profession, believing that it will prove to be a valuable addition to the resources of dental art.

The object of the "gold bandage" is stated in the program—the saving of teeth. It is not designed for use where the conditions are favorable to success with the ordinary operation of filling, but it is for the binding up of poor, weak, unfortunate teeth, bicuspid especially, which we all meet with to our sorrow and find exceedingly difficult or impossible to save permanently by any of the methods hitherto known and practiced.

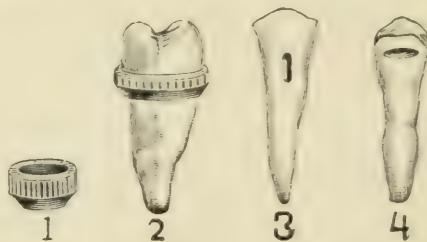
It matters not in the present case what may be the cause or causes leading to this condition of the teeth, whether it be inherent depravity or the destructive influence of vitiated secretions with which they are surrounded; we know too well that the condition exists and that such a tooth may be filled with the utmost care, with any of the materials at our command, and in a few years we find a recurrence of decay at the most inaccessible margins.

We are then compelled either to remove the filling and begin anew, or to resort to patching, under conditions less favorable than at first and with less and less hope of success at each succeeding attempt. To this is added later the complication of an exposed pulp with all its attendant troubles, and finally the tooth

breaks down and the martyr receives the reward of a golden crown, a poor recompense for the many crosses which have been borne by operator and patient before it is attained.

Now if by any means we can take such teeth before destruction has overwhelmed them, bind up their wounds, give them present comfort, secure them immunity from future attacks of disease, and insure to them long and useful lives, then we shall have made a decided advance in our art. Perhaps I am oversanguine, but it is my hope and belief that the gold bandage will enable us to accomplish this result. So much by way of preface, I will now give you my mode of procedure.

The bandage, as its name implies, is designed to envelop the tooth, covering all those parts where decay is liable to occur, as well as those which have already been attacked, existing cavities having first been filled with oxyphosphate cement. It is thus



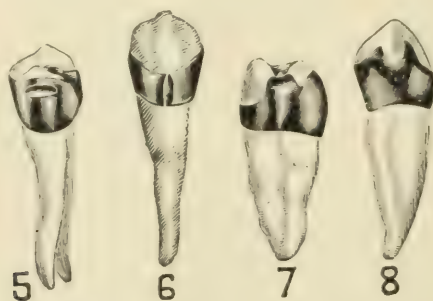
prophylactic as well as remedial. Let us take for example a superior bicuspid, though the bandage may be used on any of the anterior teeth, and if the patient has a large mouth it might be applied to the first molar, but the bicuspid are the teeth for which it will oftenest be demanded. If the tooth be in close contact with its neighbors I first pass a No. 00 separating file between them, which makes just space enough to admit the bandage without any crowding of the teeth, and then introduce a wedge on either side and separate freely. When this is accomplished I slip a rubber ring (Fig. 1) over the tooth, allowing it to impinge slightly on the gum to force it away from the neck of the tooth. The ring is made from a short section of rubber tubing, which is trimmed at one end to an edge (Fig. 2) by placing it on a mandrel and pressing sand-paper against it while it is revolving in the hand-piece of the engine. Common, cheap tubing is best for the purpose, as pure rubber is too soft for the sand-paper to act upon. Let me say here that this is not the only value these rings have.

They may be applied in most cases to roots, preparatory to crown-setting, and will open up around the stump so that the operator can see what he is doing, while trimming it to receive the band or fitting the porcelain to it. They are worn with very slight discomfort and produce no soreness, and are kept on for a day or two, when the tooth is ready for the operation.

I drill a slot on its labial face (Fig. 3) one-eighth of an inch, or perhaps less, in length, starting very slightly above the gum-line, one-sixteenth of an inch in width, and as deep as it is safe to go, making an undercut with a wheel or inverted cone bur, and to insure a neat operation the lower end of the slot, this being a superior bicuspid, should be carefully squared, otherwise it will be apparent where the ends of the bandage are connected. Next with a knife-edged disc I cut a notch on the palatal face of the tooth near the cusp (Fig. 4) and looking toward the gum, so as to give a good firm rest for the gold which is to be fitted into it. I now apply the rubber-dam and prepare the cavities. The only excavating which is demanded is simply what is necessary for the removal of the decay, as the shape of the cavity is of no consequence. This is an important feature of the operation and one that will commend itself to the patient, for in many cases a large share of the pain, which would be unavoidable in preparing a cavity for the reception of a metallic filling, is obviated. I fill with oxyphosphate, restoring the contour, and wait for the cement to set, then smooth with polishing strips and remove the dam.

I then take an impression and make a fusible metal cast upon which to form the bandage. This is made of pure gold, 34 gauge. When it is fitted approximately to the cast I try it in the mouth, place it as nearly as possible in the proper position, and while holding it firmly between the thumb and finger I take a burnisher and press the gold into the notch in the palatal face of the tooth (Fig. 5), so that it will exactly fit and fill it. Then I remove the bandage and fill up the depression corresponding to the notch with 22 k. gold solder, return to the tooth and burnish it down to a fit. I cut the ends so that they will fit into the slot, leaving them just long enough to reach the bottom. Then remove and finish. The part which comes next to the gum should be trimmed to a knife edge and made perfectly smooth. I next give the gold

a final annealing and it is ready to set. After again applying the dam and drying the tooth, I cover the inner surface of the bandage with a thin coating of soft cement, placing it in position and secure with a ligature wound several times around, and while the cement is still soft burnish perfectly to the tooth, place the ends into the slot, forcing them up against the side-walls, and fill the slot with gold (Fig. 6). The fitting of the tongue or flap which is to cover the crown surface may be done as a separate operation. If the decay included only one proximal surface and the fissure in the crown, there will be only one flap, which will cover the entire length of the fissure. I drill a small hole at the further extremity of the fissure, apply fresh cement to the under side of the flap, burnish it down, press the point into the hole and fill that with gold. If the original cavity included both proximal surfaces and the crown, you have two flaps meeting in the middle of the crown where the anchorage is made.



When the tooth is exposed to view I leave as much of the labial surface uncovered as is consistent with the strength of the bandage. After smoothing and polishing, and securing a correct occlusion by grinding away any point of the opposing tooth that may strike the gold, the operation is complete (Fig. 7).

Another class of cases to which the bandage is well adapted is where there has been considerable recession of the gums, and the whole surface of the exposed dentine has become softened by decay. In such cases I would remove the softened tissue with scrapers and coarse polishing strips, wipe over the surface with a strong solution of nitrate of silver, and apply the bandage.

In fact, the first case which I treated was a cuspid tooth standing by itself. The patient wore a partial gold plate which had abraded the palatal surface, while the labial surface was softened by disease. The bandage has been worn upon this tooth since February,

1894, and seems to have protected it perfectly. In treating cuspids and incisors, instead of cutting the notch as described, I drill a hole into the palatal surface, trim the bandage to a point at that spot, press it into the hole and secure it with a gold filling (Fig. 8).

The only apprehension I have had in regard to the treatment has been of a possible irritation of the gums from contact with the gold, but thus far I have seen almost no trouble of that sort, far less than comes from the setting of gold crowns. The gold used is so thin and soft that perfect adaptation can be secured and danger of irritation is reduced to a minimum. The operation may seem somewhat complicated, but I am sure that it can be successfully performed by any good operator, and after a little practice it need not occupy more than two hours and a half, and perhaps less time.

As a result you have a covering of indestructible material, securely anchored, perfectly fitted and united by a cement lining to the tooth, leaving no loop-holes for microbes or other destructive agents to enter. The whole a source of strength instead of a source of weakness. Why should it not be permanent?

OPPORTUNITIES OF MECHANICAL DENTISTRY NEGLECTED THOROUGH IGNORANCE OR INDIFFERENCE.

BY DR. W. H. RIDER, DANBURY, CONN., READ BEFORE THE UNION MEETING OF THE NEW
ENGLAND AND CONN. VALLEY DENTAL SOCIETIES, AT WORCESTER,
OCT. 23-25, 1895.

I shall plunge into my subject at once by making the statement that prosthetic dentistry is sadly if not entirely neglected by the better class of practitioners. For this there are many good reasons, but no excusable ones, for we must admit that nothing can excuse an operator for being unable or refusing to give his patients advice and attention in all branches of the art of dentistry. If so, then does his "sheepskin" lie, for he is not "qualified to practice dentistry in all its branches," as the document asserts.

The primary cause of this condition, others following in an easily traceable order, was undoubtedly the introduction of plas-

tic materials, and I firmly believe that they are a curse to the race, rich and poor alike, but to the poor especially. You may say that the many are benefitted at the expense of the few by being able to obtain, at a price compatible with their means, artificial substitutes for lost dentures. I assert that but few are benefitted, and not at the expense of many, but of thousands. What are the facts? In the first place, all close observers admit that the contact of any plate of the plastic materials with the mucous membrane, especially that most generally used, rubber, is detrimental in many cases to the contiguous parts and often to the general health. I will not go so far as to say that such plates are the cause of throat troubles, nasal and other catarrhs, dyspepsia, etc., but there cannot be the slightest doubt that they aggravate all such disturbances.

In the second place, plastic materials are a curse to all on account of their very cheapness. It costs much more to save the natural teeth than it does to replace them with an artificial substitute; consequently, thousands are sacrificing not only poor but perfectly sound teeth. The consequences are far-reaching, both as to practitioners and especially the poorer class of patients. Among the latter the idea has long been prevalent, and is rapidly becoming an accepted fact, that "it does not pay to have teeth filled; false ones are much cheaper and don't ache." As a consequence, therefore, going from bad to worse, it is no longer necessary to teach children to care for their teeth by brushing, unless it be the anterior ones for looks sake only; so far as the usefulness of the organ is concerned, they are not worth the trouble of saving, it is only a waste of time, and it would be preposterous to spend any money on them if the parents are poor.

Such is the present condition of affairs with the patient; how is it with the operator and how far are we responsible? The same cause has operated in both cases, and by following the same chain of circumstances we find the reason of our best practitioners having little or nothing to do with the prosthetic branch of our science. The mistake was made in the beginning, when a few of our well-meaning but short-sighted men accepted and helped to introduce rubber-work. The well known "camel" got his head into our tent at that time and now, verily, hath he kicked us out bodily. Where are we now? Following closely on

the heels of cheap plates came cheap dentists, the two naturally going together, bringing with them that horrible curse to the race, cheap work.

Assuredly, we are most thoroughly handicapped in our efforts to elevate the profession, the cheap dentist doing more in one day to lower us in the eyes of the many than we can do in a year among the few. Our few talk but little of our successful efforts; their many do little but talk of their outrageous failures; and yet, such is human nature that, without discretion, they condemn the whole. How far are we responsible for all this? It is certainly no excuse for us to relegate to poor workmen all plate-work. The curse of plastic-work exhibits itself in us, to put it tersely, in that we have before us this result—our young men of real merit entertain anything but a favorable opinion of prosthetic dentistry; many look upon it as beneath them, as disreputable. Most regard it as undesirable, something to be avoided if possible, and if they can live without it they do so. Can we blame them? No, emphatically. But if we slight all but the agreeable operations what will become of our patients?

I do not presume to offer or even suggest a remedy, but simply quote Dr. Austin's remarks, made nearly twenty years ago, on this subject, from Harris' "Principles and Practice." "In prosthetic dentistry, swaged work is the patrician element; plastic work, the plebian. When the latter runs riot, without the conservative influence of the former, the power of the people becomes a power for evil. This is precisely the danger which now threatens dentistry, in the abuse of certain most valuable processes and materials. Facility of construction and cheapness of material have encouraged a style of practice in the highest degree detrimental to the profession. If such practice is inseparable from plastic work, it should be unhesitatingly abandoned by everyone who holds the honor of dentistry dear to him."

Discussion. Dr. L. C. Taylor. Almost everyone has observed the bad effects of rubber plates and much of this is caused by slovenly methods. No one will doubt that rubber has been abused, but I very much question that it has been a curse.

Dr. Geo. A. Maxfield. Often after inserting rubber plates the patient will return in a few days with sore spots which resemble "canker sores." An excellent thing to apply to these is trichlor-

acetic acid, saturated solution. The gum heals rapidly after the application.

Dr. Fillebrown. Most dentists do give attention to mechanical dentistry. Two-thirds of the people would be "gumming" it the greater part of their lives if it were not for rubber plates. It may occasionally be an irritant, but I have seen the same effects from a gold plate, not only on the edges, but all over the mouth. It is the ill-adjusted plates and not the material that causes the irritation.

Dr. E. B. Davis. Gold is better than rubber because there is a good circulation under it, which there is not under rubber. In spite of this, however, I have seen as good results with rubber as with gold.

PERPLEXING PROBLEMS IN THE TREATMENT OF CHILDREN'S TEETH.

BY DR. MARION L. WOODWARD, BOSTON, READ BEFORE THE UNION MEETING OF THE
NEW ENGLAND AND CONN. VALLEY DENTAL SOCIETIES, AT WORCESTER,
OCT. 23-25, 1895.

This paper was undertaken with the intention only of presenting matter for discussion, and it is hoped that all will take part, for benefit can come in this way only. The oft-quoted saying of Henry Ward Beecher, when asked about a child's education, that it should begin with its grandparents, is considered pertinent with regard to the teeth. Begin now with the rising generation; the public schools are a good field in which to disseminate the necessary knowledge.

The habit of overbrushing the teeth is as detrimental as a lack of care, for frequently a deep furrow is made by the brush across the labial surface.

A cause of caries in deciduous teeth may be failure to exercise them, as children of to-day are given much soft food, but when absorption begins the edges of the roots are jagged and sharp, and while the calcification of the permanent roots is incomplete they cannot stand much pressure.

The roots of the deciduous set are considered to have much to do with giving form to the crowns of the permanent teeth, but I believe fully as much irregularity is caused by extracting too late as too early.

Cleanliness and the arrest of decay by the judicious use of nitrate of silver are also important factors.

Discussion. Dr. D. M. Clapp. It seems to me that the problems are increasing daily, as children's teeth are not nearly so good as they were some years ago. Dr. Atkinson used to advocate making separations between these teeth when they needed filling, and this is doubtless a good practice. I believe that cement with amalgam is good, but not for contour work, and gutta-percha will often last a long time and do good service.

Dr. Geo. A. Maxfield. I used to think that the parents were wholly to blame for the behavior of their children in the dental chair, but since I have had a little boy of my own I have entirely changed my belief. I seldom extract a deciduous tooth before the time it should be lost. In all operations as little pain as possible should be inflicted, for the dread which many people have of the dentist's chair is the result of vivid impressions received in childhood. I have had excellent results in the use of nitrate of silver. When a child presents, suffering from an exposed pulp, an application of the nitrate of silver, or a pellet of cotton moistened with creosote and then dipped into powdered cocaine and applied in the cavity, will generally quiet the pain at once. In most cases the pulp dies in a few days, as the children are not brought to us until after they have suffered some time. After the death of the pulp I remove all I can, moisten a pellet of cotton with eucalyptol and iodoform and place it in pulp chamber, then fill the cavity with cement, gutta-percha or amalgam. Then with a small drill I bore through to the pulp-chamber on the buccal side of the tooth just under the free margin of the gum, which will allow all gases to escape and prevent the formation of an abscess.

GUM ACACIA IN USE WITH PLASTER.—The addition of gum acacia to plaster when used either for casting models or taking impressions, is advocated by Mr. E. Lloyd Williams. When the plaster is used for the purpose of obtaining an impression, he adds one ounce of mucilago acacia (B. P.) to a pint of alum solution; when, however, the plaster is used for casting models slightly less is required. The addition of the gum acacia is said to render the plaster less pliable and more dense, and gives it at the same time a silky look. —*Jour. of Brit. Dent. Ass'n.*

FAILURES AND CAUSES.

By C. W. STRANG, BRIDGEPORT, CONN., READ BEFORE THE UNION MEETING OF THE NEW ENGLAND AND CONN. VALLEY DENTAL SOCIETIES, AT WORCESTER,

OCT. 23-25, 1895.

We regard as indispensable to the highest achievements and greatest success, a genuine love for one's work or calling, and he who chooses dentistry as a vocation, without regard to his tastes, adaptation, moral, mental or physical endowments, thinking only of the shekels that may fall into his palm, begins the race heavily handicapped, and with little uncertainty we may predict what will be the general results of such a choice. These, however, are not the men who assume the cares and burdens incident to dental society work, nor indeed do they contribute materially to swell the number of those who attend our meetings.

How can I confer the greatest benefits upon my patients? How can I permanently preserve their teeth? How can I inflict the least pain without compromising the standard of my operations? These are some of the all-absorbing, the oft-repeated, the ever-present queries in the mind of the ambitious and conscientious operator.

With only a passing reference to those failures caused by a vitiated condition of the secretions of the oral cavity, as the result of impaired health or disease; conditions under which all classes and kinds of dental operations are undermined and destroyed, causing failures for which the dentist is in no way responsible, we pause to notice some for which he may justly be held accountable. In the average cases of children, where all has been given into his care and he is trusted to do that which in his judgment is best and ought to be done, it is but reasonable to expect and even demand satisfactory results.

We are thus led to ask, Are we as thorough, systematic and painstaking in our preliminary examinations as we should be? If so, then even in a well-regulated office, where system and order prevail, it is frequently at an expenditure of time, patience, strength and vital force, when we are least prepared or able to perform this service. It would be far better to decline all responsibility than to assume it and not be faithful in the performance of our duty. An examination to be of value must be thorough, and when we consider how much of the future comfort and well-being

of our patients depends upon us, what right have we to do otherwise than institute the most rigid care in this respect? Then let every defective spot be located and explored, for only when we have fully acquainted ourselves with all existing conditions are we prepared to proceed intelligently in the treatment of the case. To the hasty glance and the guess that everything is all right may be charged incalculable mischief and irreparable loss, and while this method may be satisfactory to some, and particularly gratifying to timid children, the more discerning will seek the counsel and services of the more painstaking operator.

Placing great emphasis upon the importance of thoroughness in this first part of our duties, we pass to what seems naturally to follow. Although much of the prematurely impaired usefulness of the teeth, and unhealthy conditions generally of the mouth, have their origin in foreign deposits, do we systematically and patiently labor to keep the teeth free from these deposits? If we are lax in our methods, our patients will very likely be careless and negligent in theirs, while persistent efforts on our part along the lines of cleanliness will usually secure the co-operation of the majority of those who regularly seek our services, and under this regime pyorrhea alveolaris will rarely develop to worry and perplex us. And if by scrupulous care we shall succeed in keeping healthy the mouths of those of our patients who have passed from childhood to middle age under our care, they will certainly appreciate it and speak of it to their friends. To the young men of our profession we would say that too much importance cannot be attached to this part of our work.

A very general impression prevails that when a tooth has been filled with gold the best has been done to meet the demands for service and durability. For the most part this is true, and yet of the total of failures of fillings of various kinds which come under our notice a very considerable number fall under the head of gold operations. Again we question, Are we not striving to perform, with the various kinds of mallets, practical impossibilities? Even though cavities are prepared with the idea that the gold is to be packed by mallet force, will not frequent examinations during the progress of the operation along cavity walls and borders convince us that a more perfectly adapted filling can be made if a reasonable amount of hand-pressure with proper instruments be

employed? Cohesive gold is carried only in a line with the force applied, and there are few cavities so located that it can be perfectly built against all the surrounding walls by mallet force alone; hence come so many gold fillings that are not really the ideals of perfection they may at first appear to be, causing the failures that in process of time become apparent.

Again, how frequently do we invite failure when we permit our better judgment to be overruled by our pride or ambition, stimulated by the fancies or notions of our patients, and so make prolonged operations upon teeth that have long been pulpless, and are weakened and partially disintegrated. We assist in the destruction by introducing well-condensed gold fillings, only too soon to see the objects of our care crumble away, greatly to our disappointment and chagrin. Far better temporize with the plastics, sacrificing as little tooth structure as possible.

In the care of children's teeth, and indeed with poorly organized teeth of patients of all ages, we are very generally agreed that the best results are obtained by the use of tin or the plastics. While, as a rule, plastic fillings must be frequently repaired or replaced, we do not regard them as failures, for the decay has been stopped, the teeth preserved, and comfort secured, yet we sigh for relief from the necessity of these frequent repairs.

During the last seven years we have very materially reduced the demands for these repairs by using a combination of amalgam and oxyphosphate, in cavities not specially prominent, and it is steadily growing in favor because of its excellent record as a preserver of tooth structure. When the cavity is prepared and the dam in place, select a matrix, a piece of file will do, then put enough filings of amalgam in a mortar to fill the cavity and make plastic with mercury; add to this one-quarter to one-third of phosphate cement powder and grind together into a dry powder; then put on a glass slab, add the liquid, make into a stiff ball and put into the cavity quickly. The cement sets at once, but the amalgam remains plastic for a little while longer.

When properly manipulated this filling withstands the wear of mastication about as well as amalgam and far better than tin. It adheres to the cavity walls and borders equal to oxyphosphate, but unlike the latter it is not porous and does not become impregnated with the fluids of the mouth. It does not disintegrate at

or below the gum margin. It is unshrinkable and in no case have we found tooth structure stained by it. One word of caution—it cannot be successfully used in the presence of moisture.

PIANO-WIRE BROACHES FOR ROOT-CANALS.

By J. H. WOOLLEY, D. D. S., CHICAGO.

In the treatment of all pulpless teeth I deem it easier, and the operation more successful when finished, to cut away the teeth sufficiently to get a full view of the pulp-chamber and approaches to the pulp-canals. With piano-wire, from which broaches can be made, the operator can explore and reach the apical foramen without endangering the sides of the root, which he would be apt to do with drills. Engines drills are not under as complete control as broaches, and are objectionable because when the roots are curved near the apex, the drill, instead of following the abrupt curve, will pass through its angle. In using a broach a delicate sense of touch and a deftness of hand are required. Broaches made of piano-wire are superior to any others, and in penetrating the pulp-canal the best results are obtained when the broach is not filed too small. It should be left large enough to give sufficient strength throughout to force it along the canal, but wherever it binds it should be filed.

INFECTION THROUGH THE TONSILS.—We have already published a reference to Professor Dieulafoy's communication upon the entrance of the tubercle bacillus through the tonsil. It seems that other constitutional diseases, besides tuberculosis, may originate in the same way; for instance, in such conditions as osteomyelitis and suppurative periostitis the micro-organisms found in the bone affection are the same as found in the tonsil. The following conclusions should be interesting to the Dentist:—(1) The tonsils may constitute a gate of entrance for pyogenic organisms, even in the absence of ulcers or diphtheritic lesions of the mucous membrane. (2) This role of the tonsils in the ætiology of osteomyelitis and various other suppurations is probably more important than that of the mucous membranes of the intestine and respiratory tract. The inference from these observations is that cleanliness and care of the mouth and pharynx are of great importance as a means of preventing certain diseases, especially acutesuppurating osteomyelitis.—*Brit. Jour. Dent. Sc.*

Digests.

The Dental Record for November, 1895.

"NEURALGIA," by H. W. Turner; read before the Students' Society of the Dental Hospital of London. The first question that confronts us is:—What is Neuralgia? In it pain is the most important and prominent symptom. Some say that it is a disease in itself, others that it is only the symptom of some other disease. Some say that lesions of the nerve trunk occur, but from investigations that have been made there have been found in the neurilemma, medulla and axis cylinder of the nerve, granular deposits, but in only a very few cases have there been found any central lesions. Neuralgia may be defined as a disease of the nervous system, in which pain is the prominent symptom, which follows in the course of nerve trunks and ramifies in their terminal branches.

There are many varieties of Neuralgia, and they may be divided into two main groups. (*a*) Superficial; (*b*) Visceral. To take the first group—the superficial—it may be sub-divided into—(*a*) Trifacial (of which I will deal shortly); (*b*) Cervico Occipital; (*c*) Cervico Brachial; (*d*) Intercostal; (*e*) Obturator; (*f*) Crural; (*g*) Lumbo Abdominal; (*h*) Femoro Popliteal or Sciatica. The Cervico Occipital and Cervico Brachial varieties are of interest to us, as they are sometimes the seats of Neuralgia due to certain morbid conditions of the teeth. In the Cervico Occipital Neuralgia the nerves affected are the posterior branches of the first four pairs of spinal nerves, and of these the nerve most affected is the great Occipital, the internal branch of the posterior division of the second cervical nerve, which supplies the integument of the back of the scalp and as far forward as the vertex. In cervico brachial Neuralgia the nerves affected are the posterior branches of the four lower cervical nerves and the brachial plexus, causing pain in the shoulder, neck and arm, following down in the course of one or more nerve trunks.

The chief visceral varieties are—(*a*) Cardiac; (*b*) Uterine and Ovarian; (*c*) Gastric; (*d*) Neuralgia of kidneys, Urethra and rectum. As to the symptoms, at first there is generally numbness and cutaneous anæsthesia, followed by intermittent pain, which

increases in severity and is of a darting, boring, gnawing character, increasing in frequency as the attack increases in length. This is then followed by complete loss of the pain, but generally to be followed sooner or later by another attack. When the pain is most severe it may radiate to other nerves with which it is connected and so increase the area of suffering. Very frequently in bad cases certain definite and exceedingly painful points may be found, and these always correspond with the points of emergence of a nerve from a bony groove, or of a nerve branch becoming subcutaneous, or of a nerve passing through some muscular aponeurosis. Vaso-motor disturbances are frequent; such as pallor or intense redness. In cases where a nerve supplying a gland is affected, increased secretion follows. Loss of sensation in the skin over parts affected often follows, though at first it is sensitive to touch.

Neuralgia may be diagnosed by its typical sharp, shooting, boring pain of an intermittent character, which follows in the course of a nerve trunk, with certain particularly painful spots. In making a diagnosis it may be confounded with other diseases, the chief of which are—(a) Locomotor Ataxy; (b) Rheumatism; (c) Myalgia. In Locomotor Ataxy the pain is of a lightning-like rapidity, somewhat resembling Neuralgia, but they are not localised and are often accompanied by diplopia, and also absence of patellar reflex. In Rheumatism the pain is diffused and influenced by movement, and in acute cases is accompanied by a high temperature, and more especially pain in the larger joints. In Myalgia the pain does not occur in paroxysms, but is dependent on movement.

The second kind, which is certainly of a less intense and severe character, is exceedingly common and occurs in people of all ages, and most frequently is due to some diseased condition of the teeth. The pain is of a darting, shooting nature, passing along in the course of the branches of the fifth nerve, and is frequently accompanied with a dull gnawing sensation, and comes on in paroxysms. It is greatly aggravated by exhaustion, want of food, anæmia, and overwork or anxiety. Patients frequently obtain temporary relief by taking a dose of quinine. The most general cause of this class of Neuralgia is chronic inflammation of the tooth pulp, but various other causes may give rise to

it. The more common are—(1) Difficulty in eruption of wisdom teeth; (2) Exostosis; (3) Presence of secondary dentine; (4) Alveolar periostitis; (5) Overcrowding of teeth; (6) Decomposition of a dead pulp in a confined space. In dealing with cases of this kind it is frequently far from easy to arrive at a correct diagnosis, and it must not be inferred that Neuralgia caused, for instance, by some affection of a tooth in the lower jaw, should of necessity follow in the course of the inferior maxillary division, as it is by no means always the case. Indeed, the globe of the eye, the supra orbital nerve and the temple, and especially a spot near the vertex, are frequently the seats of Neuralgia due to affections of the teeth.

A very interesting case is recorded of a patient who for some years was subject to violent headaches confined to a small area a little to the left of the vertex, recurring three or four times a week. The spot became hot and relief was afforded by pressure with the hand. A left upper canine tooth was suspected and was extracted, with most satisfactory results, no recurrence of the attacks following. Other cases were also recorded, as the case in "Tomes' Dental Surgery," of a patient complaining of pain in a perfectly sound upper second molar. The real tooth causing the trouble being the corresponding tooth in the lower jaw, which was extracted under gas, and the patient could not be persuaded that it was the lower tooth and not the upper one that had been extracted till he felt the space caused by its extraction in the lower jaw.

It must not be inferred that all cases of this kind of Neuralgia are due to the teeth, for they may have their origin from various other causes, and may be cases rather for treatment by a physician than by the dental surgeon, in which case it is advisable to refer them to their doctor; and also I think it would be advisable for all medical men who have patients suffering from any Neuralgia of the fifth nerve to refer them to a dental surgeon, to have a thorough and close examination of their teeth, to see if there should be any likely cause for the Neuralgia.

In the treatment of Neuralgia one of the most important points is to pay particular attention to the general condition of the patient, *i. e.*, whether the patient is suffering from malnutrition, anæmia, or loss of tone, when the diet should be nutritious and easy of assimilation. In such cases codliver oil and tonics

are especially indicated. In examining cases due to anæmia, it is well to observe the bloodless condition of the gums and inner surface of the lower eyelid, since anæmia may be the cause, in spite of a fair amount of color in the face. Also, in all cases of Neuralgia the patient should, as far as possible, be kept free from worry, noise, or dazzling light, especially in the trigeminal variety. The hygienic surroundings of the patient should be looked after, and the patient must not be allowed to remain in close, stuffy rooms, but have as much fresh air as possible, while avoiding draughts. A considerable amount of relief may be obtained by the use of small blisters applied close to the principal focus of pain. In very bad cases of long duration, a portion of the nerve may be excised, or, what is frequently very satisfactory in result, the nerve may be stretched. In cases where all attempts have failed, removal of the patient to a warm, dry climate is frequently successful. Special drugs are recommended in special cases of Neuralgia, the most useful of which are quinine and iodide of potassium. In cases of Neuralgia resulting from rheumatism, salicylate of sodium, in 10 to 20-gr. doses twice or three times daily, may be of some good, but it is of no use in chronic cases or gout. Failing this, one or two grs. of potassium iodide, with about 10 to 15 grs. of sodium carbonate may be useful. In cases due to malaria, which is a very common cause of Neuralgia, quinine, in 10 to 15-gr. doses, twice or three times daily, some time before a paroxysm, is very useful, it also is in cases of a gouty nature, when about 1 gr. of the acetic extract of colchicum may be given as well. Quinine is very useful, especially in cases of Neuralgia of the first division of the fifth cranial nerve.

Having briefly attempted to give a general description of Neuralgia, I will now try to describe briefly Neuralgia of the fifth cranial nerve, or Trigeminal Neuralgia, also commonly known as Tic-Doloureux. Of all the nerves of the body, this is the one most commonly the seat of Neuralgia; and when one sees, as we do in a hospital like ours, the large number, I may say without exaggeration, the hundreds of cases which every week come under our care for treatment, where the terminal branches of this nerve, in communication with the teeth, are subject to such constant irritation and cause such intense suffering; and when we think of the large area of this nerve's distribution, and its numerous com.

munications with other cranial nerves, there is no wonder that it should be affected more frequently than other nerves. This, the largest cranial nerve, has various functions. Arising by two roots, of which the anterior is the smaller and motor root, and the posterior the larger and sensory—thus closely resembling a spinal nerve—it is at once a motor nerve, a nerve of common sensation, and one of special sense—being a motor nerve to the masticatory muscles, and of special sense of taste by the lingual branch, and is the great nerve of sensation to the face and head.

Its communication by the nasal branch of the ophthalmic division through the lenticular ganglion with the third nerve accounts for disordered movements of the eyeball. With the facial nerve it communicates in several ways. Through Meckel's ganglion it communicates by the vidian nerve with the geniculate ganglion of the facial, also by the otic ganglion of the inferior maxillary nerve through the small petrosal nerve. Its communications with the sympathetic system of nerves are also numerous, through the gasserion ganglion, the otic, lenticular, and Meckel's ganglion. It also communicates through the otic ganglion with the glossopharyngeal nerve. Hence, with so vast a communication, Neuralgia of the fifth cranial nerve may easily be set up by irritation of almost any nerve of the head. Beside its great area of distribution, when affected with Neuralgia there are a great number of special areas of tenderness and pain, corresponding chiefly with points where the nerve pierces bone or facia, or becomes subcutaneous. Thus, in the ophthalmic division tender points exist where—(a) the supra orbital nerve emerges from the foramen on the supra orbital arch; (b) where the nasal branch becomes cutaneous above the ala of the nose. In the superior maxillary division, at the—(a) infra orbital foramen, and (b) over the malar eminence. In the infra maxillary division the—(a) mental foramen and (b) parietal eminence.

I think Neuralgia of the fifth nerve may be divided into two classes—(I.) that known as epileptiform Neuralgia, the most severe form of neuralgia; (II.) that of a lesser form, due in the greater number of cases to the diseased condition of the teeth. Taking the first form, its most characteristic feature is the absolute suddenness with which a paroxysm comes on, and the fearful and intense and almost unbearable pain, and also the equal suddenness

of its departure. A patient may be sitting down quietly, when he is suddenly attacked, the pain being so intense that he may get up and rush about the room in absolute despair. It may attack one or all of the three branches. Frequently the muscles of the face are thrown into violent spasms, and also flushing of the face and lacrymation may occur. The paroxysms may last about twenty to thirty seconds, and may occur as often as every few hours, or even less, or may be absent for a few months, only to return as severe as ever. Patients who are victims to it acquire a worn, haggard and aged expression. This class of cases occurs almost invariably in people past middle life, very rarely before the age of forty years, and chiefly in people over sixty. Patients frequently come of a family which is tainted with insanity. This kind of Neuralgia never seems to be of reflex origin, nor due to peripheral irritation of any branch of the fifth or other nerves.

British Journal of Dental Science for December, 1895.

"ORAL SURGERY," by Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S. (Eng.) *Tumours of the Gum*. The term "epulis" is used in different ways by different authors. By some it is used to signify a growth situated upon the gum, no matter of what nature; by others it is limited to one variety of growth, viz., a fibrous tumour; others again define an epulis to be a sarcomatous tumour originating from the bone or periosteum. It is therefore advisable either to discard the term entirely, or else to use it only in its topographical sense, prefixing an adjective such as fibrous, sarcomatous, etc., to indicate the nature of the tumour. The following tumours are met with on the gum:—

Fibrous Tumour. A fibrous epulis may grow from the periosteum of the surface of the alveolus or from the periodontal membrane. It is composed of fibrous tissue and is covered by normal gingival mucous membrane. It is usually a small tumour, not much larger than a pea, but may, if allowed to grow unchecked, attain much larger dimensions, so as even to protrude from the mouth. It may be sessile or pedunculated. When growing from the surface of the alveolus it does not displace the teeth, but when growing from the alveolo-dental periosteum, the neighbouring teeth are frequently separated. Fibrous epulis often occurs in connection with carious teeth, or with the stumps

of teeth, and seems to be the result of irritation, but one often sees cases in which the teeth are perfectly normal. The most common situation of this form of growth is between the upper cuspid and lateral incisor. It is said to occur more frequently in women than in men. It grows very slowly; a tumour the size of a pea may have been noticed for a year or more. It does not recur after complete removal. It is painless unless it is large enough to come in contact with the opposing teeth, in which case it is apt to become ulcerated and give rise to a good deal of pain.

Fibro Sarcoma. Many examples of the common form of epulis contain spindle-shaped and round cells, as well as fully formed fibrous tissue. They resemble the fibrous epulides in their situation and general characters, but differ from them in their microscopic structure and in the facts that they are somewhat softer, grow rather more quickly, and have more tendency to recur after removal. They often contain spicules of bone.

Myeloid Sarcoma. A myeloid epulis consists of a stroma of fibrous or fibro-cellular tissues, imbedded in which are a number of multinucleated giant cells. They are identical in structure with the myeloid sarcomata which grow from the interior of the ends of long bones. Although they project upon the gum, they grow from the bony alveolus and not from its periosteal covering like the fibrous and fibro-sarcomatous epulides. They are much rarer than the ordinary epulis and are more vascular and therefore softer; they are of a dark maroon tint, and are often mottled with purplish spots; they occur in young subjects and grow rather quickly, and show a decided tendency to recur unless they are very freely removed.

Vascular Tumours. This name is given to a variety of epulis which is composed of fibrous tissue containing a large number of dilated, thin-walled blood vessels, mostly venous in nature. These tumours are most often met with in the incisor region, and may grow from the gum, from the periodontal membrane, or from the alveolus itself. In some cases they appear to be in connection with decayed teeth, whilst in others they have no connection at all with the teeth. They usually begin as a small bright red spot which grows slowly, forming either a sessile tumour which passes between the teeth, or a little pedunculated growth which hangs from the gum; they are very soft and compressible of a bright

red or dark purplish color according to the nature of their vessels, very prone to bleed when damaged by a tooth brush or hard piece of food, more especially when the surface is ulcerated, and occasionally they pulsate synchronously with the action of the heart. They are innocent tumours and do not recur after removal.

Papilloma. Papillomata of the gum are rare. It is not customary to apply the term epulis to this variety of tumour. They consist of an overgrowth of the papillæ of the gum and resemble papillomata of other parts of the body in their microscopic structure, being composed almost entirely of epithelial cells supported by a fine fibrous substructure. They may grow from any part of the mucous membrane covering the jaws. They are usually pedunculated; their surface may be more or less smooth, or may resemble a small piece of cauliflower, or may be surmounted by long shreddy processes like enormous filiform papillæ. They are innocent tumours, but occasionally in old people they may become epitheliomatous, especially when exposed to continual irritation.

Epithelioma. Epithelioma of the gum occurs as an ulcer more often than as a definite tumour, it is therefore undesirable to include it under the "epulides." In structure the growth resembles squamous epitheliomata of other parts. The onset of the disease is very insidious and apt to escape recognition; it begins as a small ragged ulcer usually close by a diseased tooth which has been a long-continued source of irritation to the gum. After removal of the offending tooth the ulcer does not heal as it would were it of a simple nature, but tends to increase both towards the cheek and towards the tongue. Induration of the base of the ulcer soon occurs, but owing to the natural hardness of the gum it cannot be appreciated until the ulceration has extended to the soft tissues of the cheek or tongue. As the ulcer increases in size its edges become ragged and everted and its surface foul and sloughy. Before long the lymphatic glands at the angle of the jaw become enlarged, hard and fixed. The breath is fœtid, mastication very painful, and there is profuse salivation; ultimately cachexia supervenes and the patient dies from exhaustion.

Diagnosis and Treatment of Tumours of the Gum. It will not suffice to make a diagnosis of "epulis"; that there is a tumour on the gum will be at once evident on inspection. The important point to decide is the nature of the tumour, as upon this decision

the prognosis and treatment must depend. It is not always easy to distinguish between a purely fibrous epulis and one in which there is an admixture of sarcomatous elements until a section of the tumour has been made and examined under the microscope. One must be guided by the rate of growth and the consistency of the tumour; the longer it has been growing and the harder it is to the touch, the more likely is it to be purely fibrous, and, conversely, the more rapid its growth and the softer its consistency, the more likely is it to prove sarcomatous.

A simple fibrous epulis should be cut away with the smallest amount of damage to the surrounding parts. It will usually suffice to remove it with a knife or a small gouge. The adjacent teeth, unless obviously decayed and in close connection with the growth, should not be interfered with; it often happens that a permanent cure can be affected without the sacrifice of a tooth. If from the rapidity of growth and soft consistency of the tumour it is suspected to contain sarcomatous elements, or if recurrence has taken place after previous removal, then more radical means must be adopted. Not only must the whole tumour be removed, but a thin layer of bone must also be taken away from the site from which the tumour springs. If the growth originates from or involves the alveolo-dental membrane the tooth must be extracted, and the alveolus cleared out with a gouge. When the growth is large and sarcomatous in nature it may be necessary to remove the whole thickness of the alveolus; this may be accomplished by making a vertical saw cut on each side of the growth and detaching the piece of bone carrying the growth by means of cross-cutting bone forceps. In those rare cases in which the size of the tumour necessitates an external incision, it should be made in the middle line of the lip, the resulting scar being scarcely perceptible. The lower border of the jaw should always be saved if possible so as to preserve the contour of the face.

Vascular tumours of the gum are easily recognized by their colour and by their great tendency to bleed. They may sometimes be cured by repeated applications of powdered tannin, but the most satisfactory treatment is to excise them and to arrest the subsequent hæmorrhage by applying the actual cautery.

Papillomata should be excised.

The early diagnosis of epithelioma of the gum is a matter of

great importance, for it is only whilst the disease is still small that there is any hope of effecting a permanent cure. Any chronic ulcer on the gum in a person beyond middle life should be regarded as malignant if it fails to heal after the removal of all sources of irritation, such as rough teeth or badly fitting plates. In doubtful cases the diagnosis may be settled by removing a small piece of the edge of the ulcer and examining it microscopically. The treatment must be effective and must be carried out without delay if the patient's life is to be saved. No time must be wasted in applying caustics, but the growth must be very freely excised, removing at the same time a wide area of healthy tissue. It will always be necessary to remove the whole *thickness* of the jaw, and very often the whole *depth* as well. Before proceeding to operate the surgeon should make up his mind that he has a fair chance of removing the whole disease, as an incomplete operation is worse than useless.

The Buffalo Medical Journal for December, 1895.

"NOTE ON POSTERIOR NASAL TAMPON," by J. T. Pitkin, M. D., Buffalo. For the arrest of severe epistaxis by a posterior nasal tampon, on account of its simplicity of performance and absolute results obtainable therefrom, I would solicit the reader's attention to my *modus operandi*. With the patient seated, preferably in a stiff-back chair, insert one end of a small-sized elastic rubber tube, with a strong silk cord passing through its lumen (tube should be from two and a half to three feet long), into the bleeding nostril. When from three to five inches have been thus introduced, instruct the patient to make repeated forced expiratory efforts through the mouth, *i. e.*, cough, while the operator continues the slow introduction of more tubing *via* nares. In a few moments the distal end of the tube, with its contained cord, will be extruded from the buccal cavity. Should vomiting intervene, although otherwise by no means desirable, it would nevertheless accomplish the same desideratum. Now, if a medicated cotton tampon is securely fastened to the mouth end of the cord, and gentle traction made upon its nasal extremity, the tampon will be drawn to the position desired in the posterior nares. The rubber tube can then be slipped off of the cord, which, with the pledget of cotton, will be left *in situ*.

The Medical Record for January, 1896.

"SUCCESSFUL TRANSPLANTATION OF TEETH AND CHLOROFORM ANAESTHESIA DURING SLEEP," by E. S. Pettyjohn, M. D., Alma, Mich. My little daughter, aged two years and nine months, fell headlong down the cellar-stairs and struck the two upper middle incisors on the edge of the step, extracting them as completely as if by forceps. The alveolar processes of the right tooth were fractured and the gum lacerated the entire length of the root. After the fright and the crying, which continued a half-hour or more, the child was rocked to sleep in her mother's arms and placed in her buggy. We found the teeth on the cellar-steps, uninjured. They were placed in a normal saline solution of tepid temperature. On the arrival of an assistant with chloroform for anæsthesia, the child was sleeping quietly. Chloroform was administered without the child awakening, and the teeth were placed within their sockets and pressed into position, the edge of each tooth fitting firmly in a groove of one blade of a pair of forceps, the hand of the operator being placed on the back of the head, with the pressure properly directed. The gums about were cleansed antiseptically, and the teeth left in position without further dressing or application. The accident occurred about two o'clock, and when the child awoke from her sleep at half-past five, her teeth were in place. The teeth had been out of the mouth fully one hour. Milk and soft food were administered and the lacerated edges of the gums cleansed after eating. Healing of the gums occurred by first intention.

It is now over four weeks since the teeth were placed, and they are now solid, in good position, and of normal color. The gums are normal in color and consistency, and the appearance of the mouth quite natural. I report this as a successful case of transplantation of teeth that had been out of the mouth over an hour, and as another demonstration of chloroform anæsthesia during natural sleep.

The Dental Cosmos for December, 1895.

"SUSPENSION DENTURE," by C. L. Alexander, D. D. S., Charlotte, N. C. This consists of an interior part made of porcelain facings, and a posterior part made of gold or other suitable

material. When these parts are placed in the mouth and secured together, the denture is retained in position by close adaptation to adjoining teeth, and further supported by metal posts set in the lingual surface of the adjacent teeth.

After preparing the holes for the gold post in the lingual surface of the teeth, the first step to be taken in constructing a suspension denture is the selection and adjustment of a porcelain facing or facings, as the case may require. If only one tooth is to be replaced, we will find it preferable to grind and adjust the facing to the natural teeth in the mouth. By doing this we are assured of a more perfect adaptation. The facing should be broader than the space to be supplied, thus allowing it to slightly overlap the adjoining teeth. The facing is then backed up with gold (28 guage) in the usual way, placed in position in the mouth, and an impression taken from the lingual aspect. Before doing this, however, we should place what we term a guide post in the holes made for the reception of the metal post. The guide post will come out with the impression and aid in the construction of the metal work. Before making the model, consisting of marble-dust and plaster, the gold backing is placed in position on the impression, and a staple of fine binding-wire is introduced through the holes made for the platinum pins. The model secured in this way is provided with gold arms, extending from the backing to the guide post and engaging them, also with a gold band encircling the holes through which the wire staple has been introduced. After bending the ends of the wire down upon the band to hold it in position, the little inclosure is filled with the investing material, which prevents the solder from flowing in. By soldering in the usual way the parts are all united, and, when finished up, the piece is adjusted to its place in the mouth, the gold posts having already been secured in the holes made for their reception. A little cement mixed quite thin should always be smeared within the holes and upon the screws before inserting them. When the facing has been placed in position, the pins are bent down within the little chamber to secure the denture to its place. The piece is finished by filling the chamber with some suitable material. I prefer to fill over the pin with cement, then finish up with amalgam, made as dry as possible.

The advantage of this method is the ease with which the den-

ture can be repaired in case of an accident. I have adopted this method for securing all anterior facings, both in crown and bridge work, for a number of years, and cannot emphasize too strongly the value of this point.

"FRACTURE OF THE INFERIOR MAXILLA, WITH TREATMENT," by W. W. Coon, D. D. S., Alfred, N. Y.; read before the Eighth District Dental Society, at Buffalo, Sept. 30, 1895. A very recent case of fracture of the body of the inferior maxilla which presented itself to me I treated in the simplest manner I could conceive, and in looking up the literature of this matter was so thoroughly surprised that I found nothing which approaches the method used for simplicity, that I venture to describe it to you. Three propositions amply justify my attempt to renew your interest in the matter and elicit a little discussion: First. Of all the bones of the body it is the most exposed to injury. Second. When fractured it is the most difficult to retain in correct position. Third. Most cases are subjected to unnecessary pain and inconvenience in treating by the use of interdental splints. I say most cases, because the method of which I am about to speak can be used only when a tooth or teeth are contained in each of the fragments or portions of jaw fractured, and this condition is most commonly presented.

The procedure consists of fitting a metal band accurately to one or more teeth contained in the distal fragment, and soldering to its buccal side a stiff metal bar that shall, when the fracture is reduced, pass in apposition with the buccal side of a loosely-fitting band or bands surrounding a tooth or teeth contained in the other fragment or fragments. Then with the bands on the teeth (uncemented as yet) mark with an excavator point a line on each band the bar passes,—a horizontal mark on a line with the bar and a perpendicular mark on both band and bar,—to indicate where they shall be soldered; then remove and solder, all of which a dentist will accomplish with little or no trouble. Competent assistance may be necessary in maintaining an accurate adjustment of the fragments while the bands and bar are being marked. This done, and the marked places soldered, what remains to perfect the "band-and-bar splint" is to crimp in the ends of the loosely-fitting bands, so as to firmly retain the cement used in its

final adjustment, and placing it on the teeth again (the fractured fragments in right apposition), to determine the accuracy of your soldering. If any deviation has been made, it can be easily corrected, either in the bar or bands, as only the band to which the bar was first soldered is an accurately fitting one, and the appliance is ready for cementing in place. The bands are made loose enough to allow of considerable crimping in at the bottom, *and to allow the appliance to be adjusted on the teeth before the fragments are in perfect apposition*, as it is difficult to maintain such apposition with the mouth sufficiently open to allow it to be placed in position; but while it is going on to the teeth with the cement for its final adjustment, the parts are brought into proper relation and rigidly held so for the little time it takes the cement to harden. When this is accomplished, the fragments are held as in a vise. There is not the least mobility possible, and no undue strain is given the teeth, as is the case when they are ligated with wire or other material, or when "Angle's method of fixation" is used. The advantages are many and very apparent to both operator and patient. The ease and quickness of construction are considerations of value to the operator. The absence of interdental splints and bandages, the use of the jaw in easy speech and mastication, and nothing in the mouth to prevent cleanliness, will be appreciated by all who are in the habit of appreciating anything. The case from which the band-and-bar splint that I show you was made severely tested its utility with loose teeth that would not have withstood strain.

The patient, a middle-aged farmer, while backing a very heavy seeder out of a barn, was struck under the jaw by the tongue of the implement with such force as to give him not only a single compound fracture of the right half of the body of the jaw, but to knock out what few upper teeth he had that came into occlusion. The left fragment of the lower jaw contained but one tooth, a second bicuspid, which was quite loose, the fracture being slightly oblique from the space of the first bicuspid toward the symphysis. He was suffering intense pain when brought to my office by the physician to whom he went. The fractured portions fell away from each other, the left portion especially being lower than one would expect it to be. You will correct me by saying that the *muscles drew them away* from one another, but I say they "fell

away", because they hung perfectly loose, and the muscles you speak of are at rest except when in voluntary action, and such action only obtained when I hurt him severely in moving the fragments. This "band-and-bar splint" was made in a few minutes, gold being used only because I did not have German silver, and when placed in position most of his pain stopped. He was directed to use his jaw as little as possible on account of the extreme looseness of the second bicuspid; and for more temporary comfort, to rest his jaw and not hurt the upper gums; borated cotton was placed over his lower teeth and a four-tailed bandage applied, which, however, was not tight enough to be much support to the jaw, and was dispensed with very soon. I did not see him again until a month had passed, when he came to have the splint removed. It was perfectly solid on the teeth, and the second bicuspid was much firmer than when the splint was applied. He reported having had a very easy time; said the bone had been united solidily for a week past; and as such was the case, the bands were cut off. The result was all it could be, and was attained with very little effort or time spent on my part, and little inconvenience on his. Had there been more teeth in the shorter fragments, or had that tooth been firm in its socket, I think he could have masticated well from the first.

"PORCELAIN INLAY WORK," by W. E. Christensen, D. D. S., of Munich, Germany; read before the Pennsylvania Dental Society, July, 1895. Porcelain inlay work is far from being a new thing, and yet, because of the new process of making it, it can almost be considered a new kind of work. The old, tedious method of grinding a piece of porcelain so as to fit roughly into a cavity in a very conspicuous tooth, is well enough known to most dentists. The work took a great deal of time, and the results were usually far from satisfactory. There are cases, however, where even the best dentists would prefer such an inlay, imperfect as it may be, to the very best gold filling. Such cavities are those on the labial surface of the front teeth; while on the other hand, cavities which are still more conspicuous—as, for instance, large contours in the incisors and cuspids—could not be restored at all with porcelain. The new method consists simply in taking an impression of the cavity with platinum foil pressing the foil into the

cavity with balls of cotton, and burnishing it smoothly over the edges. By this method a matrix is made and at the same time an impression of the cavity is taken, and the inlay can be built and baked in the matrix so as to fit the cavity. In this way we obtain well-fitting inlays, and large sections, contours, and even projecting corners of the incisors can be restored a great deal stronger and a great deal better looking, and the operation can be performed with a great deal less trouble to the patient, than would be possible with gold or any other material.

The chief objection to all kinds of inlay work is the belief that the cement with which it is set will wash out and leave an empty joint. This danger certainly exists, but, though not entirely obviated, it is reduced almost to a minimum by the high degree of fit and contact which can be obtained by fusing or "casting" the inlay for each special cavity. The heaviest foil used is No. 60; skillful operators will soon be able to use much thinner foil, but even with No. 60 the inlay can be made so as to leave no joint at all. This is done simply by beveling slightly the walls of the cavity outward from the margin, so that when the platinum is removed the inlay will fit tightly on the beveled edges of the margin, thus taking up the space occupied by the platinum and making a perfect fit at the margin. To accomplish this the inlay need not rest on the bottom of the cavity, but should only extend sufficiently into the cavity to be retained. When I make inlays in the molars, which I do only for very large cavities,—believing that in this way I obtain the nicest and strongest fillings with the least trouble to the patient,—I use very heavy foil for the matrix, say No. 60, and after removing the foil I set the inlay with cement, cleaning out the joint, however, with a pointed excavator before the cement is quite hard; or I let it get hard and then clean it out with a very fine bur, and fill it up with amalgam, which entirely prevents any washing out of the cement.

The methods of retaining the inlays are several. When only one wall has been destroyed, as in labial cavities, the inlay, of course, cannot be made to extend into an undercut. Undercuts may be made, but only after the impression has been taken, and merely enough to hold the cement. The inlay, however, can be made with a retaining-groove in the inlay itself, by placing a ball of hardened plaster of Paris on the bottom of the matrix before

introducing the body, and scraping the plaster out again after the baking. In this way the cavity holds the cement, and the cement holds the inlay. If the case is that of a corner contour, the inlay can be made to extend into one undercut, which must be made as wide and deep as possible, into the cervical portion of the tooth, provided the tooth is not a dead one, in which case, of course, the inlay can be made to extend into the pulp-chamber. Inlays in the large molar cavities are usually sufficiently retained by merely extending into the cavity. The retaining groove may be made in the inlay itself, or, if the tooth is a dead one, a pin from a porcelain tooth can be baked into the porcelain so as to extend into the pulp-chamber.

The baking of the inlay is a simple process. The porcelain is obtained in the form of a fine powder, like the body for continuous gum work. The treatment of the powder is similar to that used in continuous-gum work; it is mixed with distilled water to a cream-like consistence, and applied with fine camel's hair brushes. For its first introduction into the matrix I use a fine-pointed steel instrument, so as to make sure of getting it into every corner, also because in this way it is easier to reach the bottom of the matrix without touching the edges. At the first and second baking the edge must be left free on account of the contraction of the body, and for this same reason the body in the matrix should have a convex surface, as otherwise it is apt to contract the matrix and change its shape. At the last baking only the body should touch the edges of the matrix. The edges of the matrix serve as a guide for the correct shape of the inlay, and when a large section is to be made the correct size and shape are produced by repeated bakings, and by gradually adding body until the desired contour has been obtained. In making the matrix a piece of foil must be used sufficiently large to be folded into a triangular shape, or better, into the shape of a funnel, which is introduced into the cavity with the point toward the deepest portion. The foil, when pressed against the walls with balls of cotton and a pair of stump-tweezers, will spread to the walls without tearing. The burnishing of the edges should be done by hand-pressure only, using a stone burnisher. A piece of india-rubber finally pressed over the entire edge with a uniform pressure will secure a most exact impression.

The overlapping foil must not be cut away, but is left on during the process of baking. The matrix may be invested in plaster and silex, or plaster and asbestos; if this is done, it will take one to one and a half minutes longer to fuse the porcelain. I usually get the best results by not investing the matrix, but for the student or inexperienced operator it is safer to use the investment.

"THE FIRST PERMANENT MOLARS," by Dr. W. E. Marshall; read before the Union Convention of the Sixth, Seventh and Eighth District Dental Societies of New York State, at Binghamton, Oct. 29, 1895. While we give due consideration to physiology and hygiene, we should not neglect diet and exercise as important factors in the development of the teeth, and worthy, I think, of more attention than they receive from either the profession or the laity. The first molars are developed at a period when the demand for bone-producing elements in the system is greater in proportion to the supply than at any other, and unless those elements are forthcoming in sufficient quantity, the teeth are sure to suffer, since nature supplies first those parts which are of more vital necessity, the bones of the skeleton. We as a people are prone to eliminate from our food-products those parts in which are stored, in greater quantities, the elements fluorin and calcium, so necessary in the formation of good enamel and dentine. Children should be encouraged to eat such food as contains the bone-producing elements in the best proportions and in the best form for ready assimilation, prepared in such a manner as to require thorough mastication.

It is a law of the animal kingdom that an organ unused loses its function and deteriorates or disappears entirely; so if man should cease to use his teeth, he would soon become edentulous. If the deciduous teeth are made to perform a reasonable amount of work, a demand for tooth-tissue is created, the functions which supply it are stimulated, and much good results to the developing first molars and, indeed, to the whole permanent denture, while the more thorough insalivation and the more perfect digestion and assimilation of the food which result benefit the whole system.

A better appreciation of the value of the first molars, and a more thorough understanding of all the circumstances which in-

fluence them in their struggle for existence, would beget in parents a more intelligent interest in their care and greatly facilitate the preservation of them. Children would be taken to the dentist in good time, and his services could be rendered with much more satisfaction, both to himself and to his patients.

A few general rules, together with the operator's enlightened and conscientious judgment, influenced, of course, by the ability and willingness of the parent to pay for the work, must be our guide in deciding when and how we shall endeavor to preserve these important organs. As a rule they should always be retained in position until the eruption of the bicuspid. Then if their structure and their tendency to decay seem to predict their loss within a few years, their removal before the eruption of the second molars is advisable. We so frequently see good results from their extraction before the eruption of the second molars, as compared with the disastrous results of their removal after that period, that we deem it a safe rule, where there is not a probability of preserving them permanently, to extract before the twelfth year, while subsequent to that period every effort should be made to preserve even their roots.

Having decided that the teeth should be preserved, the operator must use his own judgment in the adoption of methods and the selection of materials. Gutta-percha and oxyphosphate seem to give the best results where the tooth-structure is poor or the decay extensive, while in other cases gold and amalgam are preferable. Even when badly decayed, with pulp almost exposed, these teeth may still be preserved by thoroughly sterilizing a portion of the decayed dentine to be left for the protection of the pulp, and filling the cavity with gutta-percha or oxyphosphate, after coating it with an impenetrable varnish, or placing over the nearly exposed portion a wafer of temporary stopping. Sterilization is best accomplished by thoroughly drying the dentine and sealing in the cavity, for several days, a good germicide, such as a paste made of zinc oxid, with creasote and oil of cloves placed in a depressed disk of tin and inverted in the cavity. If successful in saving the pulp, we can fill more substantially later on.

The models presented show plainly the evil results of extraction of the first molars after the eruption of the second. These are the models of the denture of a young lady, three of whose

first molars, perfectly sound, were extracted when she was thirteen years of age. The reason given for their removal was that otherwise there would be no room for the third molars. In this case only one of the spaces has been filled, while the occlusion on the right side has been ruined. The best masticating surface is the lower left, where the first molar was allowed to remain. True, the third molar has not erupted here, but we do not know that it would have, had the first been extracted, and if it had we have little reason to believe there would have been a good occlusion. The crowding of the anterior teeth has not been remedied by the operation. Here we have permanent spaces created, masticating surface sacrificed, occlusion sadly deranged, and no benefit resulting even to the crowded anterior teeth. Had those teeth been decayed, much good would have resulted from the preservation even of the roots of the right lower. The disaster resulting from the loss of a tooth is not merely in proportion to the amount of masticating surface sacrificed, but depends on the derangement caused in the remaining teeth.

Items of Interest for December, 1895.

"TO BRIGHTEN UP INSTRUMENTS," by W. J. Miller, Chicago. To brighten and make nearly as nice as new, rubber-dam clamps that have lost the plating and become rusty and discolored, dip them in a bath of sulfuric acid, then remove, and with brush-wheel and pumice make bright. Wash clean and dip in a strong solution of cyanid of potassium, and they are ready for the plating solution. This is made as follows: Put in a six-ounce bottle about ten cents' worth of nitrate of silver and four ounces of soft water. When thoroughly dissolved, add strong solution of common salt till the curdled appearance given by the salt ceases to form. When settled, use the clear portion for a battery. To make a simple and inexpensive battery, put the liquid in a glass tumbler; having two narrow strips of zinc, one to hook on to the edge of the tumbler, the other to hold the clamp or article to be plated in solution. On the upper end or hook of the zinc strip to hook on the side of the tumbler, soft-solder a piece of copper wire long enough to reach across tumbler and half-way down the opposite side; and on the other end of the wire solder a ten-cent piece of silver for an anode. Put sufficient plating solution in

the tumbler to cover the articles to be plated, leaving them in for fifteen or twenty minutes, or till nicely covered. Now remove and with brush-wheel brighten them. Repeat as many times as you wish; each time gives an extra plating. Other uses will be suggested; for nothing is more attractive in a dental office than bright, clean instruments.

The Ohio Dental Journal for December, 1895.

"A SUGGESTION ABOUT COCAIN," by G. E. Hunt, D. D. S., Indianapolis; read before American Dental Ass'n., Aug., 1895. A survey of the situation leads me to think that the per cent. solution is largely responsible for the various ill effects observed. The great majority of dentists, I believe, get their two, three or four per cent. solutions put up by a druggist, so their ideas of how many grains of cocain are required to make a four per cent. solution are often hazy.

In the majority of cases an eighth or a quarter of a grain will accomplish the desired result, while the maximum dose, one-half grain, would be attended with at least temporary ill effects. I would suggest that the per cent. solution be entirely ignored in using cocain *per se*, and that the intended dose be dissolved in an indefinite, convenient quantity of water and the entire amount exhibited.

Following this plan of procedure will impress *dosage* on the operator in a manner that no other method can succeed in doing. Another, and a potent argument in favor of this mode, is the fact that every solution used is a fresh one. The rapid deterioration of cocain solutions renders the degree of effect produced from twenty-four or forty-eight hour solutions extremely problematical. By dissolving the cocain as it is needed, and only a short time is necessary to accomplish this, the full effects of the drug are assured. In order to use cocain in this way it becomes necessary to have a pair of balances for the accurate measurement of the drug. These balances will, however, be found useful in various ways and should be part of the equipment of every well-conducted dental office, whether cocain is used or not.

"A RARE CASE," by H. L. Ambler, M. D., D. D. S., Cleveland; read before American Dental Ass'n., Aug., 1895. A young man,

aged seventeen years, has both superior lateral incisors missing, and no outward signs of their being imbedded in the jaw. The inferior denture has the proper number of teeth, but both of the central incisors are remarkably small, perhaps one-fourth the size they should be; still they are of good form and structure, firmly fixed in the alveolus, and the gingiva indicates well formed roots, about in proportion to the crowns. The young man's father, mother, and grand-mother, who are very intelligent people, and have a dentist in the family, state that they are positive that the temporary central incisors were shed, and that these two small teeth erupted in their places.

Both superior and inferior temporary dentures were normal. His mother needs a left superior lateral incisor to complete a full denture; the father's is complete. The grand-father and grand-mother, on both the father's and mother's side, had the full number of teeth. The only abnormality we could trace, except the mother's, was that the grand-mother retained the left superior temporary cuspid until she was fifty-three years of age, at which time a permanent cuspid, of fair form and size, erupted and is still in place after a lapse of twenty-three years.

"THE PATHOLOGY OF INFLAMMATION," by G. E. Hunt, D. D. S., Indianapolis, read before Tri-State Meeting, at Detroit, June, 1895. For purposes of description the process of inflammation may be divided into—first, changes in the blood vessels and circulation; second, exudation of fluid and of blood corpuscles from the vessels; third, changes in the inflamed tissues. This division is made merely to facilitate consideration of the subject, and it must not be imagined that these changes occur successively, for such is not the case—they are all taking place at the same time.

We have first dilatation of the vessels in the affected area, with increased rapidity of blood-flow. Irritation of a sensory nerve will produce dilation of the arterioles in the area to which the nerve is distributed, by reflex action. On account of their non-elastic walls the capillaries connecting with these arterioles do not dilate proportionally; consequently, blood-pressure in them is increased and acceleration of blood-flow through them results.

After about an hour of this accelerated blood-flow, that of

retardation of blood-flow occurs, the vessels continuing dilated. Retardation is due to certain changes in the inner or endothelial wall of the smaller veins, which cause it to become sticky. This degenerative change also affects the cement substance binding together the edges of the endothelial cells constituting the vessel wall, deteriorating it and rendering it more penetrable. The increased friction produced by this sticky condition of the vessel wall is soon evidenced by the gradual slowing of the blood current, and the tendency of the leucocytes to adhere as they roll and tumble along the periphery of the lumen. It is probable that this morbid condition embraces also the inner wall of the arterioles, inasmuch as it is histologically identical with the corresponding wall in the veins, but the adhesion of leucocytes is greater in the veins than in the arteries, because the blood is not driven in successive waves in the former and the flow is not so intermittingly swift. The valves in the veins also assist in causing arrest of the leucocytes. Other corpuscles adhere to these, and the lumen of the vein is gradually occluded—the blood-current becoming proportionally slower. This process extends back into the capillaries also. As long as there is a channel of sufficient caliber in the veins, the red corpuscles pass on through, but when that is closed to them, or so nearly so that only a few may find a way, the others mass themselves in the capillaries and arterioles, causing these latter vessels to look as though filled with a red injection mass. There are leucocytes mixed in with the red corpuscles, about the usual proportion as found in the normal blood.

Oscillation occurs when the veins have become so nearly occluded that the flow is materially arrested. Then, at each heart impulse, the blood surges into the arterioles and capillaries leading to the affected veins, and not being able to pass through, flows back during diastole. Stasis follows oscillation. In stasis the blood-mass is stationary in the vessels, although it may remain fluid for two or three days. During stasis the capillary wall, being unnourished, gradually perishes—starves to death. When this occurs, thrombosis or coagulation of the blood takes place. This, in brief, constitutes the changes occurring in the blood and circulation.

Coincident with dilatation and increased blood-flow, we find the normal exudation of fluid from the vessels much increased in

quantity and changed in quality—becoming much more albuminous and consequently more coagulable. At first the lymphatics, by extra efforts, are able to remove it, but in a short time it is poured out in such quantities that those vessels are overtaxed and the fluid accumulates in the connective tissue spaces, swelling the part.

Now, if a small vein or capillary is closely observed, leucocytes are seen passing through the vessel wall, at first scatteringly, but eventually in great numbers. They pass out through small openings in the cement substance which joins together the edges of the endothelial plates constituting the vessel wall. During inflammation, while the vessels are distended, this cement substance gives way in the shape of minute holes or stigmata, which gradually become larger and are known as stomata. The leucocytes pass through the stomata mainly by virtue of their amœboid movements. The cause of this diapedesis of leucocytes may be found primarily in the deteriorated condition of the vessel wall, by which facilities are afforded for its penetration, and in the inherent tendency of the cell to exert its power of amœboid motion. Contributory conditions exist in the pressure of fluid and other leucocytes from within, and the probable fact that the surface of the endothelial plates are sticky, and the cement substance through which the cells pass is not, so that passage through the stoma is easier than passage along the inner surface of the wall over the sticky endothelial plates.

The red corpuscles, not being endowed with amœboid motion, are not found in any quantity outside of the vessel, unless death or rupture of the vessel wall occurs; then an immense dispepesia of red corpuscles may occur from the engorged vessels. A few red corpuscles are seen in the earlier stages, but they are those that some unwonted circumstance has thrown in front of a large stoma, and which the blood-current has forced through. The white and red corpuscles thus set free in the tissues are washed along by escaping fluid, and crowded forward by other leucocytes escaping, and finally may wander some distance from the vessel from which they escaped. The leucocytes also move away by their power of amœboid motion. Thrombosis, when it occurs, puts an end to the escape of fluid and of corpuscles.

The changes occurring in the inflamed tissue may be briefly

described. The tissue is softer than natural, usually watery-looking, blurred, and the cells are indistinguishable. The cells are separated by fluid and obscured by fibrin filaments and leucocytes. Nourishment ceases and coagulation necrosis may occur.

Such, in brief, is the course of all inflammations. If the cause of the irritation be removed, and the general health is fair, an inflammation may be stopped at any stage. If coagulation takes place, an abscess with loss of tissue is bound to result. Rise of temperature, where it does occur, is due simply to more rapid circulation of the arterial blood. Swelling is due to the exudation of fluids and corpuscles into the part; pain, to pressure of such exudate on the terminal nerve-endings, mainly. Impaired function is the result of the general injury to the tissues.

The International Dental Journal for December, 1895.

"A NEW APPARATUS FOR CONTINUING ANÆSTHESIA WHILE OPERATING IN THE MOUTH," by Thomas Fillebrown, M. D., D. M. D., Boston; read before the Academy of Stomatology, Oct. 15, 1895. At the Columbian Dental Congress, in 1893, I exhibited an apparatus for maintaining anæsthesia without a mouth-piece, which I described as consisting of "a bellows, connected by rubber tubing with the long tube of a twelve-ounce wash-bottle, with a stop-cock intervening to regulate the flow of air. From the bottle extends a half-inch rubber tube to the patient. The bottle is filled one-third full of ether. The bellows is inflated and the stop-cock opened, so as to allow the air to bubble up freely through the ether and become saturated with ether vapor. The etherized air is discharged through the second tube, a few inches from the patient's face."

I have since found it unnecessary to pass the air through the anæsthetic, but obtain equally good results by simply passing the air over the ether or chloroform. I have also found that if the administration of the anæsthetic is somewhat prolonged, the evaporation reduces the temperature so low as to prevent saturation of the air; when this obtains, the hand of an assistant or a cloth wet with warm water should be applied to the bottle to raise the temperature to, at least, 60° F. In cases of children I have found no difficulty in, from the first, maintaining a perfect anæsthesia, but my experience with adults proves that they must be

first thoroughly anæsthetized by ordinary methods, as many adult patients require an almost entire exclusion of air for a time to become fully anæsthetized. I encountered two partial failures before I realized the cause. But with these patients this method proved more than sufficient, after the anæsthesia was made complete by the ordinary administration. I have lately added a bent metallic delivery-tube, which enables the assistant to stand behind the patient while administering the anæsthetic, and thus be entirely out of the way of the operator. The mouth-gag I believe to be essential to success, and I never omit its use. Perhaps infants might not need it.

I have thus far been intent on establishing the complete success of the anæsthesia, and have made no effort to economize the ether. As I now use it, four ounces of ether will maintain complete anæsthesia for one hour; further experience may make less sufficient.

With this apparatus, simple as it is, complete anæsthesia may be maintained for any length of time, and any operation on the face or within the mouth of the patient be performed, and the operator will not be interfered with any more than during an operation on any other part of the body. An assistant can use the sponge freely and keep the throat clear of blood and mucus, so that very seldom will it be necessary to use any other means to free the mouth of accumulations. The bellows is one of the ordinary dentist's foot-bellows. The bottle, with rubber stopper, is one taken from an oxygen apparatus found at the dental depots. The stop-cock is not absolutely essential, and some glass tubing will answer to pass the air through the wash-bottle. A tin-worker can furnish the delivery-tube at short notice, and rubber tubing is always at hand, so no one need be deprived of the benefits of this method for lack of an apparatus.

Many conceive the idea that it is a spray which is furnished the patient to breathe, but nothing is further from the truth. If a patient inhales from a sponge or towel saturated with ether, he does not breathe ether as such, but ether vapor. It is just the same if air is forced through or over liquid ether. The air simply takes up the ether vapor, and the patients breathe etherized air, the same as is breathed through a sponge or other inhaler.

The essential merit of my invention is that the etherized air is discharged toward the patient from a point far enough from the

face to prevent the apparatus from interfering with the operation going on in the mouth, and in sufficient quantity and with sufficient force to furnish an anæsthetic atmosphere for the patient to breathe without taking in air from outside the current. I will add here that the surplus anæsthetic discharged into the atmosphere will not sensibly affect either the operator or his assistant.

Air containing ether or chloroform vapor has long been used for inducing anæsthesia, but always with an inhaler that covered the face and rendered any operation about the mouth impossible while the anæsthetic was being inhaled. Dr. Snow, in 1849, mixed chloroform vapor with air in the definite proportion of three and one-half per cent., and found it very safe, successful, and economical. Clover, in 1862, used the same mixture as Snow, and devised an apparatus for administering it, the principal feature of which was a large reservoir-bag hung over the operator's shoulder. Snow, about the same time, devised an inhaler lined with lint. The lint was wet with chloroform, and through this the air was drawn by inhalation, which, while passing over the surface of the lint, took up a portion of the vapor.

Dr. Horace Packard, of Boston, a few years since, devised a very convenient and compact apparatus for administering etherized air, which was suggested to him by the Junker system for giving chloroform, and it was the use of this that suggested to me the apparatus which I have described.

The Pacific Stomatological Gazette for December, 1895.

"THE RELATIONS OF MATERIA MEDICA AND THERAPEUTICS TO STOMATOLOGY," by Russell H. Cool, D. D. S., Oakland, Cal., read before the Calif. State Dental Ass'n., July, 1895. The wonderful advancement of mechanical invention in dentistry has been, strange to say, one of the factors in producing a certain narrowness of mind. We are apt to devote our entire activity and effort to an endeavor to become great operators; skilled prosthetic workmen; artists in orthodontia; and we are apt to forget that the teeth are but part of that great, wonderful throbbing engine—that complex system of moral, mental and physical force—which we call man. Let me not be considered as decrying the purely mechanical branches of our profession. By all means let our lives be devoted to necessary efforts to master them; but let us

go farther and higher also. Let us remember that we have nervous conditions to deal with sometimes, as well as the eradication of decalcified tissue; that sometimes there is a sensitive quailing invalid behind the cavity that is being artistically filled. We should have in mind our duty to the patient, and know that often we can relieve him more by systemic treatment than by any local manipulation, however skillful it may be, upon the teeth themselves.

The study of the human face becomes absolutely unavoidable in successful practice. One patient that an injury will produce no visible effect upon will be followed by another that a much slighter operation will produce a serious and enduring impression, and yet both of these patients are apparently in perfect health; still there is an unlikeness in their temperament, which should be our guide in calculating the effect of an operation.

In handling extremely nervous patients, I believe it our duty to use any and all remedies at our disposal in an intelligent manner. Aromatic spirits of ammonia, administered previous to a tedious sitting, will often have a pleasant effect, also anti-kamnia, or combination of anti-kamnia and codein. Phenacetin, or phenacetin and caffeine, acetanilide, anti-pyrin, or in some cases, morphine sulphate, or in conjunction with sulphate atropine, one-fourth grain of the former and one one-hundred and fiftieth grain of the latter can be used advantageously, and a patient that would be a suffering, howling torment to the operator will become as docile and quiet as a lamb. Extreme cases come to us and we should be as equal to an emergency as any surgeon. No surgical operation upon the human body is free from danger.

The first and most important of the consequences of any operation is hemorrhage. Though with every surgical operation there must always be a small amount of blood lost, it is the aim of the operator to lose as little as possible. The more the hemorrhage the slower the repair; and the less of blood is lost the quicker the repair; also, in proportion to the loss of blood, shock takes place.

There is probably no one present who has not had experience with anæsthetics, when you have been compelled to perform a surgical operation within the mouth or upon the associated part. How many of you have found your patient with rapid respiration,

rapid or intermittent pulse, patient filled with fear of the consequence of your efforts to repair some pathological condition. Such patients are most frequently anæsthetized without any preliminary preparation, and are frequently the source of great anxiety to the operator and the consulting physician. I have, myself, taken part in cases where the lips have turned pale, even purple, the finger nails turned black, a cold perspiration sprung out over the entire cutaneous surface, respiration ceased, pulse nil, and patients apparently in a moribund condition, where to the casual observer death must certainly take place; and yet, with the hypodermic use of whiskey, aromatic spirits of ammonia, digitalis, nitroglycerine and artificial respiration, the circulation and respiration of these patients speedily took place and they returned to life. Of these and kindred agents I wish to speak and occupy a few moments of your valuable time.

Alcohol.—May be injected at a temperature of ninety degrees thirty gtt. to 3i without sloughing. A temperature below this or above may produce sloughs. Flood made two hundred injections of whiskey in coffee in four hours with complete success, though at the same time he injected ten to twenty minim doses of tincture of belladonna, which may have contributed to the result.

Amyl-Nitris.—Sedative and anti-spasmodic; lowers temperature by ozonizing the blood; relaxes arterial system; reduces arterial pressure. Sixteen to eighty minims have been injected in a dog, and ninety minims in a man, but I consider ten minims an unsafe dose hypodermically.

In a formula of ten parts amyl-nitrite, alcohol thirty parts, glycerine sixty parts; total one hundred parts. Eight to fifteen minims should be injected every hour as the condition of the patient should warrant—that is, the absence of color to the face, a small and frequent wiry pulse.

Nitro-Glycerinum.—A powerful poison. One to six gtt. of one per cent. solution produces fullness, quickness of pulse, diminution of arterial pressure, similar in its effect to amyl-nitrite, and can be used in hemorrhage, in stimulating heart action without causing perceptible increase of arterial pressure; hence a remedy of much importance in hemorrhage, because it increases the vital forces without producing arterial fullness, which would result in further hemorrhage and possibly death. Would advise the injec-

tion of one drop of one per cent. solution a few minutes before the injection of cocaine. Would suggest also its use to the extent of one, two or three drops in all cases of collapse after the administration of an anæsthetic or any surgical operation, but would recommend in addition to this remedy the speedy hypodermic injection of aromatic spirits of ammonia, whiskey and digitalis. The three latter agents may be used hypodermically in from one-half to one drachm doses, and these doses may be repeated every one-half hour if the patient is in extreme collapse; but, if in ordinary cases of hemorrhage, with but slight shock to the patient, fifteen minims each of these three remedies at a temperature of ninety degrees, with injection of two or three minims of nitro-glycerine and inhalations of nitrate of amyl, are sufficient to stimulate the vital forces and bring the vital organism back to its normal condition.

The question arises in our minds: what parts of the human anatomy should we avoid in the use of the hypodermic needle, and of what parts we should make use? The places to be avoided in puncturing are veins, inflamed parts and bony prominences; to be more expressive, it would not be wise, if you desired to give any medicated injections, to insert the needle through the skin on the inside of the tibia, on the dorsal surface of the foot, on the back of the hand or fingers, on the scalp, on the forehead, over the olecranon process or posterior to the ear. These parts are principally bony tissues, covered mostly by skin, and almost devoid of lymphatics, the latter being eminently necessary in taking up a medication and carrying it to the central organs to procure the required effect.

Having considered the points on human anatomy to be avoided, I will now speak of those regions which, in my mind, are the most appropriate for the assimilation of agents that we desire to equalize the circulation and to stimulate the nervous system. The external part of the arm, away from the principal blood-vessels; the outer side of the thigh, away from the principal blood-vessels; in the abdomen, where there are practically no blood-vessels, and in the chest tissues, where there is also an absence of important vessels.

Now a word about the syringe, which should be thoroughly sterilized. After drawing the required amount of liquid into the

syringe, shall we immediately insert the needle through the skin and inject the fluid therein? Most certainly not, because in drawing a fluid from a receptacle a certain amount of air must certainly be in the barrel of the syringe, hence it will be necessary to place the syringe in a perpendicular position, the needle uppermost, and the piston must then be pushed forward until all the air is forced from within, and one drop of the fluid appears. I believe that lack of attention to this particular point is the cause of a great deal of sloughing and disagreeable effects, and the injection of a minute portion of air has resulted fatally.

Also one word regarding preliminary treatment of anæsthetic cases, or those particular cases where with the usual observations we frequently find the pulse abnormally rapid, the patient timid, the respirations rapid, and all indications present of a slight shock before any surgical interference. I have concluded that there are medicines in the pharmacopæia that will destroy those depressive conditions and permit us to continue to operate in safety considering that the heart and kidneys are in a normal condition. I am in the habit of administering one-fourth grain of morphine by the mouth one hour before an operation. Fifteen or twenty grains of bromide of potash have also a happy result in quieting the nervous system, and when administered with brandy we have the cerebral sedative and cardiac stimulant. Chloral, five grains; morphine, one-fourth grain; brandy, one ounce, have, with me, destroyed in the majority of cases the usual nervous symptoms that are unpleasant to me as a precedent to any operation. These same agents may be administered with benefit to our patients when operations are performed without anæsthesia.

The Dental Review for December, 1895.

"TREATMENT AND FILLING OF PUTRESCENT PULP CANALS," by Dr. H. C. West, Chicago; read before the Odontographic Society of Chicago. For convenience of discussion pulpless teeth may be classified as follows: First. Those which are found in dormant condition. Second. Those in which irritation may excite inflammation of the peridental parts. Third. Those in which the peridental membrane is in an inflamed condition. Fourth. Inflammation of the membrane followed by alveolar abscess discharging through fistula.

The first, or dormant class, is one with which we are all more or less familiar, and in which the pulp has died with no immediate pain to patient, nor after disturbance, until disturbed. The cause of death usually being some slight blow or accident which causes the change to take place, or may be caused by regulating irregularities. Amongst other causes of death may be mentioned fillings in too close proximity to pulp, escharotics applied to deep cavities without proper precautions, etc. Neuralgic troubles may often be traced to teeth of this class while the pulp is undergoing the change. This class of teeth may remain in the same dormant condition for years, giving no disturbance to their possessors. Manifestations of a more serious nature, however, are liable to occur at any time through some irritating cause and it is then that we approach the second class.

Gaining access to the first class should be done with the utmost care by application of rubber-dam (particularly upon the anterior teeth), and partially and by slow degrees opening into the chamber by aid of a very sharp drill or bur, which should be held under perfect control, care being taken not to allow the instrument to drop or press with sufficient force into the chamber and thereby force any of the secretions through the apical foramen.

Having gained a partial opening into the chamber, immediate and thorough disinfection should be resorted to by application of H_2O_2 upon a small pellet of cotton by aid of broach, or better still, should fluids be present, a small crystal of permanganate of potash may be used, being carried gently through the opening already gained and allowed to dissolve in the fluids found there, ever remembering in either case the injunction already given to avoid force and thorough disinfection before disturbing pulp canal.

If the operator be careful enough in this class of work the majority of them may be successfully treated and filled within a few days. After carefully cleansing in the above manner and removing later such of the pulp as shall be left, a dressing of some good antiseptic should be carefully introduced and the tooth properly sealed. In the course of two or three days the treatment should be removed carefully, dry the cavity with hot air and apply second treatment, filling a week or ten days later. Should periodontal trouble arise during this course of treatment we then

have the second class to contend with, and the one in which the most care and delicate manipulation on the part of the operator must be manifested.

The second class, or that in which slight irritation to the peridental membrane takes place, may follow rapidly upon the first of its own accord or may be caused by carelessness upon part of operator in treating the first class as already stated. This second class of cases may occur from various causes, such as teeth in which the pulp chamber has been opened to the secretions of the mouth indefinitely, or from causes of violence similar to the first class of cases.

This secondary inflammation of the peridental membrane demonstrates itself by gases given off from such teeth as may be closed, or by the putrid matter having been forced, either by the act of mastication or otherwise, through foramen. Treatment in this case should be the free opening of the canal and the removal of pulp, followed by a mild antiseptic dressing. Counter irritants should be applied freely to the gums, among which may be mentioned capsicum plasters; equal parts tinct. aconite, iodine and chloroform; figs; raisins, etc. This will tend to act with favor upon the inflamed condition of the peridental membrane, and will restore to a more normal condition the congested circulation and high state of nervous irritability.

It is also a noticeable fact in this class that an effusion of secretions, due to the inflamed state of the blood vessels, is forced through the foramen, and the same care is necessary in applying the dressing that would be necessary in case of generating gas. Even in the later stage of treatment, after fear of generating gas has passed and the operator feels that he is safe in placing a compact sealed dressing in the canals, he is somewhat astounded to find that packing of the dressing too closely, and not allowing for these effusions, has given rise to more trouble, and doubtless all members have noted cases where, upon removal of the dressing, these effusions would well up, possibly sufficient to partially, if not fully, fill the pulp chamber, and by close observation the heart's pulsation might be plainly noted. A treatment of some mild astringent, such as tannic acid and glycerine, usually does away with this difficulty, the tannic acid acting as the astringent, while the glycerine may act as a soothing rather than an irri-

tating accompaniment. Obstinate cases of this nature will occasionally present themselves. I have in mind one case in which I devoted myself to the patient treatment of the tooth for something over three months, using everything to arrest this engorgement. I finally consulted one of our venerable fathers in the profession, and his advice was to secure temporary dryness and fill the root, which I did, at the same time applying a strong counter-irritant to the gum. The result was perfect, and since that time I have similarly treated others. This method of root filling should not be resorted to, however, until sufficient time has been given to secure proper condition, and I question whether trouble in some cases might not arise otherwise.

The third stage, or that in which the membranes are in a state of inflammation, is marked by various symptoms, among which may be mentioned redness and swelling of the gums, soreness and elongation of the tooth, accompanied usually by a dull pain, which becomes more intensified as the case progresses, until the last stage when fistula forms, or other relief be given. The same treatment as that given in the second stage should be resorted to here, together with a few other suggestions. Gaining free access to the pulp canals should be the first move, and this is not so easy at some times as we might desire. Teeth of this nature, or rather the surrounding parts, it is needless to say, are usually in a very sore condition, and every precaution should be taken to save the patient as much pain as possible. Various means may be resorted to to accomplish this. As the primary seat of inflammation may be found at the apical foramen, our main efforts would of necessity be directed toward relieving all, or as much pressure upon these parts, caused by the use of drills or burs, as possible. This may be done by placing a silk ligature around the crown of the tooth, drawing taut, and allowing the assistant to exert sufficient force in the opposite direction from angle of bur, to counteract upon the pressure of same. In cases of roots or teeth where ligature cannot be used, a wedge pressed gently but firmly between it and the adjoining tooth, or firm pressure with the thumb or finger upon the side of the tooth, will partially accomplish the same purpose.

Having gained access to the pulp chamber and removed what debris may be present, a free opening should immediately be

found through the foramen by aid of a piano wire broach, to give the putrid matter, if present in sufficient quantity, a means of escape. In constricted canals this is sometimes quite difficult of accomplishment. Should mechanical force be necessary, a Gates Glidden drill, very small, used as a hand instrument, should be used to accomplish the purpose, care being taken not to make the opening of foramen too large, thereby lessening the chances of the healing upon insertion of root filling. Another method resorted to in some cases, or more particularly in the case of chronic abscess with fistula, is amputation of root. This should be done only after careful consideration as to the health of patient. Cases where this operation may give the happiest results are those in which the roots have already been filled, having passed the proper antiseptic tests, and then from some unknown cause a sudden inflammation appears, which will not yield to local treatment. Where this is necessary, my method has been as follows: To first, by aid of the lancet, make an X-shaped incision upon the gum, carefully locating the point at which the amputation is to be made. This I follow by the use of a small drill at right angles with the root, carrying through process and root. I next take a fissure bur of same size and follow the course of the drill, cutting laterally upon the root and removing it in this manner. The operation is concluded by the use of a round bur sufficiently large to properly round off the point of root. In all cases the root should be filled previous to operation. Not long since I performed this operation upon a superior central incisor for chronic alveolar abscess of some three or four years' standing (the root of tooth having been filled). The case had refused to yield to local treatment of all kinds; the canal I found constricted near foramen, and as a last resort I decided upon amputation. The result was perfect.

As to the method of applying dressings to pulpless teeth in an inflamed state, I must say that I differ somewhat from some of our older and more learned members of the profession. The use of certain essential oils, especially in the anterior teeth, I seriously object to, more especially to the use of oil of cassia or cinnamon. Being very penetrating in its action, it will thereby infiltrate throughout the canaliculi of the tooth and remnants of putrid matter, causing the discoloration of the tooth which we are so desirous of preserving. I have noted this to my sorrow in

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several cases, and my treatment of this class of teeth at present is to use some antiseptic which is partially (but not wholly) self-limiting in its action. I find nothing for this purpose gives better results than campho-phenique. I wish to state, however, that after a dressing of campho-phenique has been applied that this may be followed by the essential oil with good result. I am quite desirous of having this point on the use of oils brought out in the discussion. Another point in which I wish to differ from a great many practitioners, is the practice of taking this inflamed class of the teeth "in out of the wet." The theory that "oil and water will not mix," I am willing to concede, but I do wish to say that with the molar teeth, where we find the canals so tortuous and restricted, that in the majority of cases, instead of applying the rubber dam to the inflamed and sore member, I endeavor to dry the cavity with bibulous paper, after the proper excavating or drilling has been accomplished, and this part I make as limited as the case will permit. I then gently place therein a palatable essential oil, followed by a small pellet of cotton saturated in albolene, a mineral oil which is practically tasteless, but which will retard the interference of the fluids and at the same time allow the gases to escape. Dismissing the patient with this treatment, I usually find that at the next sitting the tooth will more easily receive the application of the rubber dam and work can from this time be carried on from under cover. I do think that the essential oils will overcome what moisture there may be in the tooth after first sitting, to accomplish the good expected of it. This does not apply to the anterior teeth, where the canals are more easy of access and the point of infection easily reached. The danger of discoloration from moisture would also discourage its practice in these cases.

As to the fourth and last stage, or inflamed membrane accompanied by abscess and fistulæ, two things are necessary to accomplish the best results. 1. The removal of the cause by perfectly cleansing the pulp chamber throughout its entire extent. 2. To obtain as perfect drainage as possible.

Having obtained these requisites, the health of the patient should receive proper attention. Should he be enjoying a fair degree of health, abscesses arising from putrescent pulps will

usually yield more readily to mild treatment than to the more powerful drugs. Gravitation of the superior teeth tend to favor drainage in a more marked degree than is the case with the inferior. A simple syringing of the tract with H_2O_2 by the aid of a syringe in many cases accomplishes the purpose. Should this fail I follow the treatment by gently carrying through the tract a mixture of carbolic acid, parts 5, cassia, parts 3, alcohol, parts 2 (Dr. Harlan's remedy), taking care that none shall come in contact with the outside membrane. I do not, after using a remedy of an escharotic nature, immediately fill the roots, as do many operators, but await developments, as I consider it will, in most cases, as readily heal with a sealed dressing in the canal as it would were the root filled.

"PROSTHETIC DENTISTRY," by T. E. Powell, D. D. S. Chicago; read before the Hayden Dental Society. I will describe a method of swedging aluminum plates which has been very successful in my practice. If the patient comes to me with the mouth ready for a permanent plate, in every case where he cannot afford gold I advise aluminum, and find in many cases he will accept my advice when the advantages of aluminum over rubber are shown.

The kind of plate to be made having been decided upon, I choose an impression cup which will very nearly fit the mouth. If there is an extremely high arch I build up the center of the cup with wax until, when I place it in the mouth, the upper surface of the cup will come in contact with the mouth at every point. After having adjusted the cup to the mouth, the next step is to mix the plaster, which should be of the consistency of batter, salt being used to make it set quickly. If the mouth be hard I do not take the impression until I can turn the cup upside down without dislodging the plaster. If the mouth be soft the impression should be taken when the plaster is much thinner. In either case it should be done quickly. In order to have full view of the mouth I have the chair adjusted so the patient will be reclining at an angle of 45° . The plaster being ready, I press the heel of the cup firmly to the roof of the mouth with my third finger under the arch, and then force the cup up in front, taking care to have the handle pointing directly outward from the nose, so that the upper rim of the cup will pass free of the alveolar ridge and take a good im-

pression of the depressions above the ridge. In taking the impression as above described, I use only a minimum amount of plaster, and thus avoid the disagreeable experience of having the patient's last meal deposited on my carpet, and I also gain the patient's everlasting gratitude. I leave the impression in the mouth until the plaster left in the bowl will break with a clean fissure when taken in the fingers. Then I take hold of the lip and pull up the buccinator muscles so as to let moisture and air in above the impression, when it will come down without any difficulty. If this should be a flat mouth instead of one having a high arch, I would make a clearly defined depression over the hard palate, and would scrape the places in the impression that would correspond to the hard places in the mouth so as to relieve pressure on these parts when the plate is being worn. After having trimmed the impression to suit the case, I give it a coat of shellac varnish and then a coat of collodion or thin sandarach varnish, dip it in water and then pour my model. I make the model high and smooth the sides while the plaster is soft, making the base a little larger than at the ridge. After the plaster has hardened, the shellac varnish gives me the line between the model and impression, so that I can cut away the impression with impunity. If there is too much undercut above the ridge I treat with sandarach or collodion and make cones of plaster and pumice.

Then I varnish the model with thin sandarach and allow it to become thoroughly dry before using. When dry I set the model on the bench and on the inside of the ring and pack the sand around the model. The sand should be smoothed off even with top of ring. I then turn the ring upside down, tap on the model until it is somewhat loosened from the sand, then reverse the ring, holding my hand under the model so that the heel will drop first, and nine times out of ten the impression is all right. Next I remove the cones from the model and place them in position in the impression in sand.

The die is made of zinc which has been slowly heating and which will now quickly fuse when the blowpipe is turned on. As soon as it is fused I pour the metal, and then place a small ring over the metal already poured, and pour again in order to have an additional thickness of metal for swedging. When I have the die removed from the sand and cooled, I paint it with a thin solution

of whiting, or else cover with a coating of soot by holding flame of blowpipe underneath without its being supplied with oxygen. I then bury the die in sand, leaving that portion of which I wish to make a counterdie exposed. I place a ring around the exposed portion and pour the counterdie, which is three parts lead and one of tin; I am now ready to shape plate to die. I have already on hand my aluminum, which should be from 22 to 28 gauge, preferably about 24.

To get dimension of die, I make a pattern of tin foil and cut out my plate according to this measurement. The aluminum should be thoroughly annealed, and conformed to the die as accurately as possible with the aid of a piece of pine wood rounded on the end and the mallet. When I have the metal fairly shaped to the die I anneal again and place metal between the die and counterdie and swedge with a heavy hammer, but only until the plate fits the die accurately, as too much swedging will cause it to rock. I now trim the model slightly in the fossæ above the ridge and also slightly on the heel, so that when the plate is placed in the mouth it will hug up close to the tissue.

After having the model trimmed to suit, I place the base plate on it, and if it does not fit perfectly everywhere I burnish the plate until it does fit. The next step is a very important one, namely, trying the base plate in the mouth. It must conform perfectly to the mouth, touching all points at the same time and not rocking when pressure is applied on either side. If it fits closely I place my finger under the arch of the plate and pump up and down. If imperfect at any point the saliva will be forced out with a squirting noise, and by watching closely the place where the saliva is ejected its location can be readily detected. To remedy this defect the base must be again placed on the model, and burnished until repeated trials with the pumping process will prove that the bite is absolutely perfect. If the metal base is always fitted in this manner I will guarantee that the plate will adhere to the surface, no matter how flat the mouth may be.

After having assured myself that everything is all right up to this point, I take my aluminum punch and roughen the base for rubber attachment. I roughen the rim of the plate with a small chisel and also outline in the same manner where I want the rubber to extend in the arch. The wax for the bite is now placed on

the base, having used my judgment as to the length of the bite. I place base with wax adjusted in the mouth and instruct the patient to close the lips as when in repose. Then I cut away the wax or put more on, as the necessity of the case requires, until I have restored the natural contour of the face. Then I have patient bite sufficiently hard to leave a slight impression of the lower teeth in the wax. Then I remove from the mouth, take impression of lower teeth, make plaster model of lower teeth and place it in position on the wax bite, and fasten the whole thing on an articulator. The next step is to set up the teeth in wax on base plate in proper occlusion with the lower model and try in the mouth to prove correctness. Any changes to be made to give a more natural appearance can be made now, after which the plate is ready to invest and vulcanize.

TRANSMISSION OF CHOLERA BY THE HOUSE FLY.—Craig (*Medical Record*) has made some careful experiments by feeding common house flies with a fresh bouillon culture of the cholera spirillum. At the end of three days they seem uninjured, and when the intestinal contents were removed, with every precaution to prevent contamination from the exterior of their bodies, the nature of which was confirmed by culture experiments and the obtaining of the red culture reaction by the addition of acids to beef-tea culture. If the common house fly is able, without injury to itself, to carry and transmit the cause, of cholera, its agency in the extension of epidemics is probably important and may be difficult to combat.—*Phila. Polyclinic*.

THE DOSE FOR CHILDREN.—Dr. Griffith gives the following as the best scheme known for ascertaining the dose for children. It obviates all guessing at weight, etc., so objectionable to the other rules:

Adult	.....	1	
18 years	.....	$\frac{3}{4}$	
12 "	.....	$\frac{1}{2}$	
8 to 10 "	.....	2-5	
6 "	.....	$\frac{1}{3}$	
4 "	.....	$\frac{1}{4}$	
3 "	.....	1-5	
2 "	.....	1-7	
1 "	.....	1-10	
9 mo. (9-12)	"	1-15— $\frac{2}{3}$	the dose for one year.
6 mo. (6-12)	"	1-20— $\frac{1}{2}$	" "
3 mo. (3-12)	"	1-13— $\frac{1}{3}$	" "

—*Montreal Pharm. Journal*.

Letters.

NEW YORK LETTER.

NEW YORK, Jan. 20, 1896.

To the Editor of the Dental Digest,

MR. EDITOR:—The combined attractions of the month of January are now a matter of record. The First District Society had a largely attended clinic, and much of interest was brought out. Cataphoresis was the most emphasized and a successful demonstration was given. The Society meeting was a success in numbers, New York, New Jersey and Brooklyn having largely turned out, and the collation following was fully up to good form. Dr. Crouse was a decided object of attraction, and the outcome of the Tooth Crown litigation had opened all ears. He specially emphasized the need of funds and left the impression that if the profession did not wish to be protected, in the end it might not be, but simply the members of the Protective Ass'n.

Dr. Geo. Allen gave a paper of quite a good character—"The Contour, a Study." The most suggestive idea was the need and the possibility of a permanent aseptic condition being produced in cavities. This emphasizes the need and demand for a dental chemist, which will doubtless be a product of the future. We do not know all there is to be known.

The meeting of the Odontological Society was favored with the unusual attraction of Dr. Black. He is certainly a very fertile worker and all must admire his industry. He brought out what we deem a very suggestive and hopeful thought—that the present need was the study of the relation of the fluids of the body to the decay of teeth, and he predicted that this will be understood in the future. What more attractive field for investigation could offer itself to an ambitious and intelligent young practitioner? Our calling is not all written up, far from it. There was a large and attentive audience to listen to Dr. Black, which was a compliment to a worthy co-worker.

The Odontological will inaugurate a new feature next month, viz., clinics of a "high order" from four to six P. M., so stated by the executive board. It looks a little as though competition will

be an incentive to bring out the best. Three societies are now in the field, and why not? There is work enough for all. Although sixteen have resigned from the Odontological, we are quite sure that harmony will be begotten and many useful things achieved.

The Stomatological Institute is to revive the former plan of meeting at different offices and having a modest supper afterward. This insures a decidedly social atmosphere.

Dr. Carr occupied his new position, President of the O. S., for the first time at the January meeting. Dr. Northrup has stepped out of all official services. His cup has been liberally filled by his fellows and he can do this cheerfully and gracefully. He has had a long and honored career, more than falls to the lot of most men.

There has been a bit of legal breeze over the retroactive feature of the new dental law. As it is construed, *no one can come from another state and practice without a legal permit*. Dr. Younger ran against this snag by coming to New York and announcing to practice a specialty for a few weeks. Now is this retroactive feature of the law constitutional? Many would have been glad if so prominent a practitioner as Dr. Younger could have tested it. There are various rumors concerning the outcome, and a little time will probably develop the status of things. Dental legislation is not yet perfected.

Dr. Baylis, formerly well known in New York, committed suicide after a varied life. He was worthy of a better ending, as man is above the animals and should not live and die like the brute creation.

Cordially, NEW YORK.

A SINGULAR ACCIDENT.

LYNN, MASS., Jan. 10, 1896.

To the Editor of the Dental Digest,

DEAR DOCTOR:—I send you a report of an interesting case which came under my notice. Oct. 11 I was called to see Mrs. A., who, four days previous, while in a spasm (puerperal eclampsia) had caught three lower anterior teeth outside her upper teeth and split them off, together with the outer aspect of the alveolar process. The three teeth were freely movable collectively, but not

individually. The mouth was in a terrible condition; every time she closed her jaws the upper teeth came inside the lower ones and pressed the whole fragment out. She had to keep something between her teeth all the time to keep them from coming together.

I took an impression with patient lying in bed, as she could not even have her head raised. Made an interdental splint and fitted it to lower jaw, and opened the bite so that it was impossible to touch the upper and lower teeth together. Had a band go around the three teeth with a little hook to come from the band up over the cutting edge of each tooth, and a screw in each end of the band. Had nuts set in the vulcanite just back of the second bicuspid. When splint was in position I pressed the fractured part in as close as the patient could bear it, then slipped the band over teeth and screwed up tight; left instructions with the nurse to take out splint and keep clean. The metal parts irritated the mucous membrane, but this was easily overcome by wrapping a little cotton over the parts and giving a mouth-wash of listerine.

As soon as the splint was in place the patient expressed great relief, both mentally and physically, for she knew that she could not bite the upper teeth into the fracture, and she had no more pain. In four days the teeth were almost in place. I had some trouble in getting the fragment in straight, as one end moved much easier than the other, but as there was a screw at each end the difficulty was easily overcome by applying nearly all the force on one screw.

I saw the patient two months later and her mouth was all well. She insisted on wearing the splint long after it was necessary, her argument being that we did not know how painful her mouth was and she wasn't going to run any risk whatever of breaking that fragment out again.

Yours truly,

M. C. SMITH.

A TELLING BLOW.—Another bulwark of bacteriology is gone. The primary postulate upon which the fledgling science chiefly rested was, that a specific germ causes a specific disease. Now, recent investigations show that so-called specific germs may be found anywhere in the body, without regard to the nature of the lesion, if their natural pabulum, dead tissue, exists.—*Medical Age*.

The Dental Digest.

PUBLISHED THE

TWENTIETH DAY OF EVERY MONTH.

Editorial.

THE SUIT ON THE VALIDITY OF THE LOW BRIDGE PAT- ENT—INTERNATIONAL TOOTH CROWN COMPANY VS ALLEN G. BENNETT.

This suit was argued in the Circuit court of the United States, Eastern District of New York, last week, January 14-17, before Judge Wheeler, and is now in his hands, and we shall know in a few weeks at most what his decision is. Until this decision is rendered it would be folly to predict what it will be.

It is well known to our readers that the Dental Protective Association took charge of and conducted the defense in this suit. In fact, the Association has conducted all the defense in the various suits brought by the Crown Co. against its members since its organization eight years ago.

We have tried in every way possible to get a trial and decision on the validity of this Low bridge patent in any other Court or Federal District than the one in which it was tried, for the reason that this patent was sustained by Judges Wallace and Shipman in this same Federal Circuit before the Protective Association was formed, so we have made every effort to force a trial elsewhere. We have filed answers and in some cases got the Court to set and limit the time when the Crown Co. must have their testimony all in. In this way we have driven them out of all the other Federal courts in the country where they had commenced numerous suits against members of the Association, and nowhere would they stay and test the validity of their patent. But, before time for trial, they would pay the court costs and travel until they reached

this circuit, where they had had a favorable decision, and we could do nothing else but give it as good preparation as possible and await results.

Although we have additional testimony and an altogether new record, the Crown Company and their attorneys are expecting to win the case. They are relying on the proposition that Judge Wheeler will not reverse the decision formerly given by Judges Wallace and Shipman, because this is not the court or district over which he ordinarily presides. Judge Wheeler resides at Brattleborough, Vermont, and comes out of his circuit to sit in the Brooklyn court upon the invitation of his superior judges, and they think it would be a delicate matter for him to reverse the decision given by Judges Wallace and Shipman. It is on this supposition that they feel sure of winning the case or securing a refusal to reverse the decision of the other judges.

We were present at the hearing and argument of this case, which consumed nearly four days, Jan. 14-17. It is unnecessary for us to say that we do not entertain the same opinion as to what the decision will be as does the Crown Company.

As we intend giving a concise history of all the litigation conducted by the Protective Association, we will not go much into the details of this suit at present, suffice it to say our defense consisted of three distinct propositions. First, denying the complainants (Crown Co.'s) title or right to bring suit upon the Low bridge patent, because Low did not make a complete assignment, but reserved the controlling interest. That is, the agreement or assignment of the patent by James E. Low to the International Tooth Crown Company was not completed nor legally executed, because the signatures of neither Low nor the witnesses were properly proven, and because two papers or contracts are spoken of in said assignment and but one was produced. Very briefly these are the main points in the first proposition. Our attorneys prepared a separate brief on this.

Second, our proposition was that Low's first application for a patent was not for a bridge, but for a method of securing teeth permanently to bands and screws, the plate or teeth pressed firmly to, and resting on the gums, so no secretion could get underneath. The object of the bands was to keep the denture from dropping out, but the bearing and force of chewing was all to be

secured from the gums. After many letters had passed between Low, his attorney, and the Patent Office, which correspondence continued two years, his application was rejected and abandoned, and another application was made for a method which designed that all the force of mastication should be secured from the adjacent teeth by continuous bands around them, secured by cement. The artificial teeth thus inserted to be absolutely free from the gums, an entirely different method. This second application was not made until 1880, and before that time teeth secured free from the gum and attached to bands or crowns were in common use, and only after seeing such dentures did Low conceive the invention of the method now in controversy.

Third, our proposition was that Low was not the inventor nor the first to introduce bridge-work of the kind claimed in his patent, nor was it a useful device as described in his patent. The evidence on these various points is made up from a large record.

The important part of this litigation will be presented in our history in the DIGEST during the coming months.

THE STRENGTH AND INFLUENCE OF THE DENTAL PROTECTIVE ASSOCIATION APPRECIATED BY OUR OPPONENTS.

At the opening of the argument of this last case, one of the council for the International Tooth Crown Company called the attention of the court to the fact that it was not Allen G. Bennett, the defendant, that was conducting the defense, but that it was the Dental Protective Association of the United States. His remarks in substance were, that nothing could be said against Dr. Crouse, the president and manager of the entire organization, as he was honest, straight-forward and capable, yet he had thrown the whole strength of the Association, which was a powerful organization, against his (the attorney's) clients' claims, and with the influence of the Association had destroyed the income of said clients, which would have amounted to a large fortune. He also said that before his company had gotten fully started, less than a

year after it was organized, the income of Sheffield and the Crown Co. amounted to ninety thousand dollars (\$90,000), and the work of the Protective Association had reduced it to almost nothing, to less than two thousand dollars per year.

In closing, the other attorney for the Crown Company said that there never was a suit that was fought so skillfully as this, as this powerful organization, the Dental Protective Association, with its large membership was able to bring the influence of the dental profession of the entire land against his clients' claims.

In reply to this our attorney, Mr. Offield, said, in substance, and we wish we could give the eloquence with which it was said: "The record defendant in this case is a dentist, Dr. Allen G. Bennett. As a matter of fact, however, Dr. Bennett is defended by an association of dentists known by the associate name of 'The Dental Protective Association of the United States,' whose chairman is Dr. J. N. Crouse, of Chicago, Ill. The defense having been primarily organized under the authority and direction of Dr. Crouse, he having had substantially the organization and control of the defendant's record in this case as here present.

"We take it that the substantial defense of this individual defendant dentist by his fellow dentists under the associate organization, as above indicated, is a matter clearly justifiable and defensible under the necessities and the antecedent facts of this case.

"The complainant is a corporate organization, such corporate organizations usually representing such aggregations of capital, influence and wealth as to place at a disadvantage any individual litigant whose property it may attack. Especially is this the case when such conditions are applied to the dental profession of the United States. The dentists of the United States, as is a well known fact, and so well known, we believe, that the court will take judicial cognizance of the same, are without wealth, and with but fugitive pecuniary resources. They are obliged, if they retain their practice, to keep up a certain semblance of prosperity, both as to their office and social environments. They may live well, but they certainly die poor, and of all classes and conditions of men who earn their own livelihood, an individual dentist is the least able to defend a patent lawsuit, brought by an aggressive corporation and backed by distinguished counsel, for instance,

such as is represented by the complainant corporation and its counsel in this case.

"As a matter of judicial history, no other class of men, profession, or industry in this country has suffered so continuously, ruthlessly, and mercilessly, as defendants in patent litigation over a long series of years, as these self-same dentists and their oft-times precarious practice. The records of this court, and of every Federal court of the United States for more than fifteen years recently passed, have been literally placarded with suits in a continued and unbroken succession, brought by the erstwhile "Goodyear Dental Vulcanite Company" upon the Cummins patent. Millions of dollars were extorted from the dentists during that time under this patent. Thousands of dentists were ruined financially, and buried under great judgments and costs for all time by these multitudinous suits, and that too upon a patent only finally sustained by a doubting majority of the Supreme Court of the United States, and moreover, a re-issued patent, that had that court then applied the doctrine of *Miller v. Bridgeport Brass Co.*, 104 U. S., 350, would not have lived an hour, and would have been declared as invalid and worthless as the patent in the case last cited.

"Under the above conditions and circumstances, we do not think that either in legal ethics or commercial morality there can be any adverse criticism passed upon the organized body of dentists defending this case, but, upon the other hand, that such mode of defense is creditable in the highest degree to that profession and its members."

News Summary.

NOTICE.—An article on ANCHORAGE, by Dr. J. N. Farrar, New York, will appear in the February DIGEST.

AN OMISSION.—In preparing the lists of members of the Dental Protective Association, the name of Dr. F. H. Robinson, Aurora, was omitted from the Illinois list.

FOR SALE.—A well-established, first-class dental practice in a city of 260,000 inhabitants. A splendid chance for a good operator. Inquire of DENTAL DIGEST.

CORSETS.—Marchland says gallstones in women are a not infrequent sequel to the pernicious habit of tight lacing.

ARTICLES CONCERNING THE D. P. ASS'N.—In the December DIGEST we started the history of the litigation conducted by the Dental Protective Association. This history will be continued in the DIGEST during 1896.

SUIT FOR BROKEN ENGAGEMENTS.—A reader wishes the following to be inserted: Will the profession please send to the DENTAL DIGEST the full title of any legal case in which a charge for broken engagements has been involved, and which has been brought to a decision in any court above a justice court.

ST. LOUIS DENTAL SOCIETY.

The following officers have been elected for 1896: President, F. F. Fletcher; Vice-Pres., J. S. Coyle; Treas., A. J. Prosser; Cor. Secy., J. G. Harper; Rec. Secy., P. H. Eisloeffel. Com. on Ethics, W. M. Bartlett, P. H. Morrison, T. L. Pepperling. Com. on Publication, DeCoursey Lindsley, Wm. Conrad, J. P. Harper.

A DENTAL ANTISEPTIC.—Dr. Barrie Milligan, Chicago, writes, "Some time ago my attention was called to Borine, and since that time I have used it constantly. Locally on cotton to diseased cavities and as a wash for soft and unhealthy gums, and without exception it has proved itself an antiseptic quieting and healing in its action. I highly commend it in all dental operations requiring such an agent."

Dr. Milligan is but one of many dental surgeons who have borne testimony to the fact that Borine fulfills all that is justly claimed for it. In all inflammations of the mouth and gums it destroys all septic conditions and imparts a healthy reaction to all tendency to pyorrhea alveolaris in its first symptoms. It is an ideal dental antiseptic.

CHRONIC NASAL OBSTRUCTION.—Mr. Mayo Collier, in a recent address, said that nine out of ten civilized persons have some irregularity or abnormality of the nose, and that four out of five savages, aborigines, or uncivilized beings have normal nasal cavities. The speaker is of opinion that such deformities are brought about by atmospheric pressure in association with partial obstruction, and he disagrees with Trendelenberg, who has pointed out the frequent association of highly arched palates and crowded irregular teeth with nasal obstruction, and believes that the palate pushes up and deforms the septum. Mr. Collier asks what pushes up the palate, and insists that the same incontestable force (atmospheric pressure) that pushes in the septum must, of necessity, push in the hard and soft palate, and there is no help for it. It would be contrary to the laws of nature if it were not so. Will not this theory account for the saddle-shaped arch in mouth-breathers?—*Brit. Jour. Dent. Sc.*

A REQUEST TO SUBSCRIBERS.

If you have been taking the DIGEST the past year, and have not sent in your subscription for 1896, won't you do so at once?

There are a few who have not paid yet for 1895, and if you should happen to be one of them, won't you attend to this matter at once?

Help us along by recommending the DIGEST to others, and by sending us articles, news-items, incidents of practice, etc.

AN EXPLANATION TO OTHERS.

If this should happen to be the first copy of the DIGEST you have ever seen, please examine it carefully and see if it is not just the journal you want. Besides many original contributions each month, the journal contains a summary of all the best that is in the other journals, in fact, all the important news of dentistry.

We will send you the DIGEST for Oct., Nov. and Dec., 1895, and the whole of 1896, for the price of one year's subscription, \$2.00, in advance.

Take it and save your time and money.

EUTHYMOL

To any Doctor
of Dental Sur-
gery who will
enclose to us
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The Dental Digest.

Vol. II.

CHICAGO, FEBRUARY, 1896.

No. 2.

Original Contributions.

ANCHORAGE.

By J. N. FARRAR, M. D., D. D. S., NEW YORK CITY.

Tipping of Anchorage Teeth.—In operations for correction of irregularities of the teeth, the first and most important consideration is the anchorage; not only should it be properly situated, but there should be an abundance of it. In our professional literature we often read of dentists whose experience has proved to them that *bands on teeth* do not permit sufficient anchorage for moving cuspids posteriorly, and that large plates are the best anchors.

So far as I have traced out the cases of these unfortunate dentists, I have alway found single tooth ferules were used as anchors, instead of two or three ferules united in some way by solder; or if clamp-bands were used, they were improperly applied, or else were not of a size that would embrace more than one tooth.

So long as a dentist does not understand the laws of anchorage-resistance, and the philosophy of applying anchors upon the teeth, he will very likely meet with trouble. There is always liability of moving anchor teeth by any kind of lateral force upon them, but tipping of teeth to an injurious extent seldom results from skilful hands.

There are cases where a single molar is sufficient anchorage to move a tooth, but it is not a safe plan unless the anchorage tooth is supported by contiguous teeth. In my own practice I make it a rule to use more than one tooth for anchorage, and generally embrace them in united ferules or clamp-bands. Ferules may be held in contact by solder, but a better plan is to connect them by wire, the ends being soldered to the sides of the ferules. Three teeth may thus be embraced with two ferules, the middle one having no ferule upon it.

Another point to be observed in nearly all cases is to have the force applied as near to the gum as possible. If a single tooth-band is used, the force should generally act from or upon *opposite* sides, and not from or to *one* side only, unless it is desirable to turn the (anchor) tooth in its socket. When more than one tooth is embraced in the band, the force may always be applied from or upon one side only, without danger of turning the tooth.

Plates covering the gums or roof of the mouth have their uses in cases where the teeth are few and scattered, and occasionally they are called for under other circumstances, but I think that they should never be used where the more cleanly and less injurious skeleton kinds can be successfully applied.

Side teeth can be moved alternately or posteriorly; therefore, whenever side teeth are to receive a force which will cause them to move posteriorly, if the space anterior to them is needed for evening up teeth anterior to the space, calculations should be made to guard against their return to their former positions, which would be liable to crowd the teeth again out of line. So also when the side teeth are drawn forward to close spaces, provision should be made for holding them forward for a considerable length of time, or until new teeth shall erupt posterior to and in contact with them. These remarks are especially applicable to those cases requiring the correction of protruding teeth, in which the side teeth are generally moved forward more or less, and are nearly as applicable to cases requiring the moving of front teeth anteriorly, which causes the anchor teeth to move posteriorly.

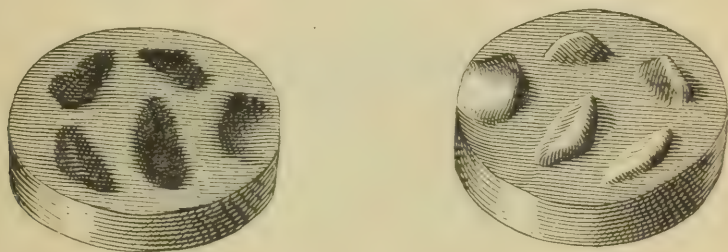
To be satisfied with simply evening the teeth or placing them in line, making no provision for preventing the return of overcrowding of the teeth, is not skillful, and such neglect is very apt to lead to disappointment. The teeth should be firmly held in their proper places by some kind of mechanism acting as retainer or as a matrix. The best mechanisms are small and consist of wires, or of ferules and wires united by solder, cemented into cavities or upon the teeth.

SUBLINGUAL MEDICATION.—Not only does the sublingual space absorb liquids, but it is well known that the whole body takes up liquids more or less readily in proportion to the vascularity of the region with which the liquid comes in contact.—*New Orleans Medical Journal*.

GOLD IN ARTIFICIAL TEETH.

BY GEO. T. CARPENTER, M. D., D. D. S., CHICAGO.

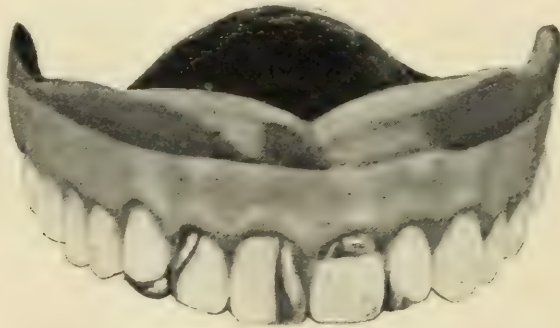
Gold in anterior teeth of the young, or especially in those of people in middle life, is so common that it can be seen wherever we find people engaged in conversation; and it is not there from choice, but from an effort on the part of the wearer to preserve the natural teeth. With many persons these fillings become a part of their identity, and after wearing them for many years they look odd if the fillings are not seen. For this reason persons, after the loss of their natural teeth, make a demand on their dentist for gold in their artificial teeth and it is sometimes very hard to grant their request, as by the method usually adopted of drilling holes for filling in artificial teeth, the filling is either much smaller than the patient wishes, or the tooth is so weakened by the drill that it will soon break away.



I had a case of this kind a few years ago. The patient had been wearing a large gold filling in an artificial lateral, which was similar to the one that he had worn for years in a natural tooth, but the artificial tooth fractured and he lost both tooth and filling. He came to me with the request that I should insert a tooth in its place with a much larger filling than the one which he had lost. I tried to explain that the size of the filling was the cause of his trouble, but he either could not understand or would not be convinced, so I tried to give him what he wanted, drilled and filled a lateral, and fractured my tooth before I had finished my repair. It was at this time that I felt compelled to try something else, and after some experimenting I adopted my present method and gave my patient a filling which covered almost one-half of the lateral, and he was much pleased with my success. The method that I have adopted is to take a plain tooth of medium size and press (any surface that we may wish to put the filling

on) into moulding compound, or a clay prepared with glycerine. I then remove tooth and cast with a low-fusing metal into a rubber ring placed over mould, then reverse the die and cast more metal in rubber ring over first casting to form counter die. The metal last cast must be just hot enough to pour and not hot enough to unite with the first casting.

Now take pure gold, 30 to 32 gauge, and stamp between dies to the desired shape. Place this stamped gold on the tooth that you wish filled and burnish to place, letting the free edge of gold extend back into the wax, so that when the case is packed and vulcanized the rubber will hold the filling firmly in place. The filling can be trimmed to the size required, but care should be taken to keep the edge of the gold that represents the margin of the filling as straight as possible. This will prevent the edge from turning up after proper beveling down to the surface of the artificial tooth.



The accompanying cuts illustrate a pair of dies which contain five different moulds of the following portions of teeth, viz:—an anterior and a posterior approximal surface, a corner, a cervical or neck of central, and a cusp of a cuspid tooth.

These dies I keep in my laboratory and in a few minutes I can make a stamped filling of pure gold for any required case. The second cut is of a sample case showing the five fillings. I had this case at Niagara Falls four years ago and many of the profession had an opportunity of examining it. I have several of this kind of fillings in the mouths of patients, and they give good satisfaction and command a good price. Recently I had one of these teeth break off from a plate, but the gold filling was undisturbed. In repairing I simply ground in a new tooth and burnished the old gold to its surface.

THE EVOLUTION OF A SECTION REPORT.

BY CHAS. McMANUS, D. D. S., HARTFORD, CONN.. READ BEFORE THE NEW ENGLAND AND CONN. VALLEY DENTAL SOCIETIES, AT WORCESTER, OCT. 23-25, 1895.

When the president of the Conn. Valley Society, with a diplomacy worthy of a better cause, arranged that I should make a report as chairman of Sec. I of that society, he must have had an idea of the peculiar propriety of linking a very small, narrow-gauge individual with an extremely large and comprehensive subject. I believe there is a formal etiquette about beginning any remarks on dentistry with the usual excuse for speaking at all. So, if I have nothing else to offer, I have the excuse. I have usually been content to attend dental meetings and drink in the wisdom—and the malted milk—with the rest of the unassuming members, having no desire to approach the platform, except to pay my silent tribute, through the treasurer, to the profession. And yet, with all these good resolves which I have kept so well in the past and hoped to keep as well in the future—here I am.

Without taking up too much time to go into the minute history of this paper, I may say at once that, when I was told that if I would become chairman of Sec. I. and read a report under that head I could positively rely upon a paper at a meeting for which I was helping to arrange an alluring paper, I did not hesitate, but accepted the office. So last May, down in Connecticut, we had a most interesting paper from Dr. Barker, and you now have the alleged report, or what was to have been a report.

I accepted the duty and then looked up the section to which I had been assigned and found that it embraced Anatomy, Physiology, Microscopy and Histology, and I wondered why it stopped there, when it might just as well have gone on and included Bacteriology, Nomenclature, Literature and Jurisprudence. With breathless interest I looked up the other sections and observed that Sec. II. had four subjects, Sec. III. had three, Sec. IV. had four, and Sec. V. (poor unfortunate) had but two. It was all right, I had my proper share and was content. There was also a sort of melancholy satisfaction in remembering that it took various parts of three different sections in the American Ass'n., with six different men, to cover my ground—and sometimes it isn't covered then.

At first I had the noble desire to write a letter to all members of the society, asking them to assist me in getting up a good report, and begging them to send me at once a promise for a practical talk, or a case in practice, or to demonstrate something connected with my section. But I did not do that because, even if I don't know much about dentistry, I know a lot about dentists. Every one of the gentlemen would have answered—if they had time—and the very few that replied would have said that they never wrote papers unless they had something to say, which would have been a rebuke to me.

In fact, a subject that included nearly all the fundamental principles of life, to say nothing of the basal principles of medicine and dentistry, with all the possibilities of modern scientific research as an aside, was an embarrassment of riches. True, I might have modestly selected some tiny corner of my great section and prepared a little paper. That was exactly the trouble, I had promised to make a report. Any one can make a report, even if it is nothing more than to report progress, but to write a paper really requires some ideas, and I didn't have any ideas.

Except a little judicious quizzing at a certain formative period of my career, I have nothing to say about Anatomy or Physiology—that is fit for your ears. And my lack of knowledge of them dwindles into insignificance when I consider what I do not know about Microscopy and Histology. Think of a chairman of such a section as mine who has to admit that he does not own a microscope.

Pardon me if I quote from a little paper by Dr. Burchard in which he says, speaking of microscopical technology:—"Even a little practical instruction in this direction is better than none at all. There is no reason why it should be little, for it is quite possible to have extensive enough a course provided by colleges to make a student something of an adept in microscopical technology. * * * * The only way to familiarize him with pathology is to have him see and think from what he sees, and to know abnormalities he must know the normal. Complete familiarity with these matters is not an ornamental accomplishment, and I hope the day will come when every dental graduate will own a 1-14 Zeis' homogeneous immersion objective (whatever that is), and may the day come before a better glass displaces this one." And I hope so too.

But to return to my subject, or to one of them. At this period in the evolution of my article I had nothing to say, but Dr. Barker would not let me off on my promise, and very properly too—he had delivered his goods. So there seemed nothing left for me but to join that devoted band that can make themselves felt in dentistry only by “the continual infliction of papers of but little general interest and of doubtful practical application,” as a recent editorial very prettily puts it.

So for a time I allowed the matter to rest, I did nothing. I left it to see what nature—human nature—would do. It always does something and it sent me to a meeting at a place which shall be nameless, held for a purpose which I need not mention, and I heard a middle-aged practitioner of medicine make the statement that so far as the teaching of Anatomy and Physiology to dental students was concerned, the physician—the general practitioner—could take care of that, with the practical dentists for the dental branches. So it had come to this, that the busy, hard-working, family doctor could, between his case of croup and measles, “put in” his little hour teaching Anatomy and Physiology to dental students. And so might such a one, and the boys and girls (they go so young to dental colleges nowadays that I may fitly use the terms) that were compelled to attend such lectures would sit on the back rows and muse on the blessing of him who first invented sleep, and, finding the subject under such a teacher tedious and unprofitable, they would do their dissecting in a careless and rapid way, and at the end of the course would vote that Anatomy was dry and Physiology a bore, and endeavor to sell their books to some of the unsophisticated freshmen.

Mind, I don't say that such a teacher of Anatomy or Physiology ever existed, least of all in a dental college, but the above remark was made and seemed to be acquiesced in by men whose position should at least guarantee intelligence, although I know that to guarantee anything connected with dentistry is unprofessional.

As Dr. Kirk has said, in one of those papers that serve to make our dental literature really literature:—“Professors may be had for the asking, but expert teachers are a rarity.” And again, “It is being felt more and more strongly that the training required to fit a man for the practice of dentistry is a peculiar one and requires a curriculum adapted to that end.”

When a boy goes to a dental college he usually goes there to become a dentist (the exceptions when he wishes to be an oral surgeon or stomatologist may be noted), and the general subjects of Anatomy and Physiology have an added interest when they are taught by an anatomist or a physiologist in thorough sympathy, through thorough knowledge of dentistry. I don't think it is necessary to put it quite so strongly as the president of the National Ass'n. of Dental Examiners does when he says—"And may the day come when every professor in every (dental) college throughout the land shall be a practicing dentist," but I think that if such time could ever come it would not be an evil day for dental colleges.

Such teachers can have much to do with making students remain, all through their lives, students who will not hang up all desire for real study, research, and original investigation with their diplomas on the wall. They have it in their power to so influence the mind of the young dentist that, if he had any money left after he bought his bicycle, he might get a microscope and become in time fit to be a chairman of the section over which I have the honor, but not the requisite qualifications, to properly preside. Such teachers, aided by the laboratory method of dental education, not only in the so-called practical branches, but also in all the branches of my section, will have much to do with making it impossible for any one, in the future, to get up in a great meeting and ask "*if the average dentist is not an ignorant man;*" or for any one to rise up and eloquently bray "that ninety per cent. of the dentists were a disgrace to their profession."

On the other hand, Dr. Perry, in one of the most delightful professional papers ever written, says: "We are weary to the last point of endurance * * * * of being told that we are a very scientific body of men, and that our profession is a very exact one. We are tired of being told this because deep down in our inner consciousness we know that it is not true."

There is probably a happy medium between these two positions for the future average dentist, and the laboratory method in dental education is going to have a great deal to do in helping to attain it.

To quote again (and let me remark in parenthesis that I don't know what I would have done in evolving this paper without the

quotations; they are the only parts with which I am perfectly satisfied): "It has been found by careful test and examination that *intelligent* laboratory training means for the student something more than dexterity and manipulative skill. Wherever it has been applied as an educational means, manual training has resulted in increased intellectual status, a brain cultivation fully the equivalent of the manual dexterity which is incident to it."

The practical attainments of the so-called "American dentist" have become somewhat proverbial, but when we consider that they are, to a greater or less degree, what he owes his patients—it is his work. It is expected of him, and for it he gets praise, thanks, and incidentally what Dr. Barrett would call an "honorarium."

The intelligent scientific cultivation suggested above is perhaps (to judge from the reports of some recent discussions) not as yet a proverb in general use, and yet it is, to a certain extent, what he owes that body which we all so love to call "The Profession."

I look at this for the moment as the chairman of a scientific and theoretical section of a learned society. I look about me and see the chairmen of the sections including Operative and Prosthetic Dentistry gloating over their clinics and endeavoring to please you with the latest fall styles in bridge-work. I can grow cynical and suggest that all I can study of interesting clinics are occipital bones, but that, of course, is simply to show my superficial anatomical knowledge and my chagrin. The truth is, that practical men will always take the most interest in practical subjects. And yet it has been the interest taken by some dentists in subjects seemingly theoretical that has led to many very practical results.

"It is passing strange that among the thousands of dental mechanics who delight in styling themselves scientific men, there has never until very lately been one to institute a series of experiments conducted for the purpose of determining the force necessary to the proper performance of the function which it is their special province to assist." Reference is made to Dr. Black's recent articles on "The Physical Character of the Human Teeth."

Towards the close of the final report of the Examination of

Prehistoric Crania, conducted by the late Dr. Patrick, is said:—"The importance of the investigation cannot be overestimated, especially that portion relating to disease and anomalies of the teeth and jaws, for there is not a question that may arise in Morphology, Histology or Physiology, on which the facts revealed in this investigation will not shed some light."

In commenting on this work to which Dr. Patrick gave many years of his life, Dr. Kirk says:—"Such work is a necessary preliminary to all truly scientific study, and while its value may not at once be apparent to everyone, the fact remains that the men who, at great personal sacrifice, pursue investigations of this class for the benefit of their colleagues, deserve their thanks and praise."

That investigations of this nature are being conducted, and papers of this class are occasionally read, may be seen from this list of a few comparatively recent articles, assorted. [The Doctor here gives the titles of several of the leading articles which have appeared in the various dental journals during the past few months; also the titles and short synopses of some recent publications. Ed.]

It is to the interest and enthusiasm on the part of such men, in the subjects connected with this section, that dentistry owes, and will have to owe, very much of its professional standing. It was to the result of this enthusiasm in a young dentist that the whole dental world pays homage to the memory of Sir John Tomes. It was to such enthusiasm on the part of another young dentist that the world owes the priceless blessing of anæsthesia.

In closing I can only thank you for your polite endurance, and express the hope that nothing I may have tried to say may have been other than within the bounds of the strictest professional propriety, or have a tendency that might in any way mislead the young men.

A DISCOVERY?—The fact that animal tissues can be stimulated by gradually increasing doses of a poison until they fail to respond, is heralded to the world as a great discovery, which it is proposed to use as a basis in perfecting a therapeutic system. In other words, saturate the system with poison, so that if a man is exposed to disease his tissues can no longer take cognizance thereof. This is about as rational as keeping a man drunk all the time that he may not crave liquor.—*Medical Brief.*

DENTAL EXAMINING BOARDS IN THE UNITED STATES AND PRELIMINARY EDUCATION.

BY G. CARLETON BROWN, D. D. S., ELIZABETH, N. J., READ BEFORE THE CENTRAL
DENTAL ASSOCIATION OF NORTHERN NEW JERSEY,
DECEMBER 16, 1895.

A resume of the question in regard to the influence of examining boards on dental education would necessarily become a history of the advance of modern dentistry, and in saying this and in claiming a large share of this advance for the examining boards, I do not mean to detract a particle from the great work that has been done by the colleges; to them, first and foremost, belongs the credit for the advanced standing of the profession of dentistry to-day. But I greatly doubt whether the colleges would have attained to their present standing, or have demanded the high standard now required of graduates, if it had not been for the examining boards. There are several ways of looking at why and how this influence came into existence, but I think the most rational is, that the colleges are not working entirely from a philanthropic standpoint, while the examining boards are. The colleges are pecuniarily interested in their work, and are, of course, striving to make all the money they can, and in some cases more than they have any business to make—but, as Rudyard Kipling says, "that's another story"—while the members of the boards are sacrificing much time, and in nearly all cases are spending their own money to elevate the standard of their profession, and this without the slightest chance of any pecuniary benefit to themselves.

These facts being accepted, with the further statement that in spite of the antagonistic attitude assumed by some of the colleges towards the boards, the latter have none but the kindest feelings to the colleges, and when they make criticisms and suggest certain reforms it is not because they love the colleges less, but their profession more.

The elevating of the standard of dentistry demanded by the profession must be done to a great extent by and through the educational mediums, and, as public institutions, they are certainly open to criticism if they fail to properly equip their graduates.

Any one who has been an unprejudiced observer of the changes

in the teachings of the schools and the character of the material turned out since the establishment of the State examinations, must admit that the boards have had an influence on the colleges, and in many instances have been the means of procuring for the student a higher and better education; which being the case, is it not the duty of the boards to continue the work by pointing out the defects which still exist, and by suggesting reforms?

The only question that now arises, is: Should these discussions be confined to the national associations representing the colleges and the boards, or should the matter be openly and freely discussed by the profession at large? I consider the latter the proper course, hence this paper.

A few years ago it seemed to be the fashion for a man, when he thought he could not make a success of anything else, to either enter the ministry or else take up dentistry as a profession; if the latter were his choice, the mere fact that he had not the preliminary education that would enable him to receive and assimilate the scientific and theoretical teachings of the profession did not enter into the question any more than did the fact of whether he had the requisite amount of mechanical adaptability.

The colleges recognize this state of affairs by theoretically requiring a preliminary education; I say, theoretically, for what they actually require hardly deserves the name of education.

In making these charges I do not say that some schools may not give a proper preliminary examination, but I do know that the examination, if it exists at all in certain schools, must be a perfect farce. In making this statement I know I shall be borne out by members of any examining board who require a written examination. To demonstrate the point I will give you a few illustrations which were taken from the papers of recent graduates and are exactly as written, none being selected unless plainly written, so that no mistakes could be attributed to defective penmanship.

Q. What relation to dental caries do the micro-organisms bear? A. Dental caries is a destruction of the tooth substance which is hard and micro-organisms is effect the soft parts of the body.

Q. What acid is produced by the micro-organisms? A. Toxic acid is produced by the micro-organisms.

Q. How? A. By the action of them upon the soft tissues, these be open.

Q. What is plethora? A. Is a disease of the Pleura.

Q. What is disease? A. Is the disturbance of the equilibrium or preversion of circulation.

Q. What is fever? A. The rising of the temperature caused by too much blood in a part.

Q. What is shock? A. Shock is the sudden checking of the nerves caused by accident.

Q. What is the difference between a narcotic and hypnotic? A. Narcotic acts on part the small intestines. Hypnotic acts on the whole large intestines.

Q. What are the stages of anæsthesia? A. drowsiness sleepy feelings long breathing Stiffness of muscles and relaxation of the parts.

Q. What are the effects of inhaling nitrate of amyl? A. It produces krowness.

Now as to a student's mechanical adaptability, granted a first-class education and the receptive qualities necessary for a good scientific education, of what avail is it if "he hasn't it in his fingers," as Dr. Eaton has so tersely expressed it; he will never make a dentist; and of this fact the colleges have as yet taken no notice; they might perhaps refuse to graduate him at the end of his three years' course, even if he stands first in his class in theory; but would they do this? And if they did, would it not be pretty hard on that student? But is it not worse to have an incompetent man turned loose upon the public? And here is where the examining boards come in again; as our friend and fellow hornet, Prof. Flagg, says, "The Board steps up and says 'Hold,' and the young man steps out into 'innocuous desuetude,' with three of the best years of his life wasted."

This is certainly hard on all concerned, the Board, the college and the student. But, hard as it may be, the Boards must do their duty as State officials and as servants of the public. There is no question about its being hard on the student; the college from which he graduated should feel a twinge of remorse for having taken his time and money and failed to give him what he has paid for. It may have done all in its power, but if the student did not "have it in his fingers" to start with, all the colleges in the

country could not have given it to him, their mission being only to develop. Where is the remedy? Many, I am sure, must have given the subject thought, but the first practicable suggestion that I have seen comes from Dr. Crouse, who says: "A young man may be bright, a good student, and well grounded in the classics, and yet an attempt to make a dentist of him would destroy his usefulness in life, make him a detriment to the community in which he practiced, and not a credit to the dental profession. Therefore, the first six weeks of the college course should be spent in finding out who are properly qualified, by nature as well as by training, to be dentists; and those who are not fit should have their fees refunded, and should be persuaded to select a more suitable calling in life. In short, the 'plucking' should be done at the beginning of the college course rather than at the end." Here is something for the Faculties to think about, and by adopting some such system they will save the Boards many unhappy moments.

And while they are occupied with this subject it would be well to look more carefully after the training of the students in the practical departments. It is a noticeable fact that since the increase of the term of pupilage from two to three years, while the scientific and theoretical knowledge of the graduates has increased to a marked degree, the practical has not only failed to keep pace with it, but has actually decreased. Are we, as a profession, sacrificing the practical to the theoretical? Whoever are leading in this matter, the profession or the professors, damage is being done and a halt should be called.

According to the reports given by the students, the means and apparatus in some of the colleges for pursuing the practical studies are absurdly inadequate, in some instances there being only one blow-pipe for the use of several hundred students, with in many cases no chance of obtaining instruction in its use even then; the demonstrator, so-called, being engaged in the more important (?) work of looking after the business part of the insertion of artificial dentures for a consideration, said consideration, by the way, netting a good round profit to the college. In fact, the colleges seem to be giving instruction only in the direction in which there is a direct pecuniary benefit to themselves, instead of educating the student to a higher standard of general proficiency in mechanics. I have had graduates tell me that the case they

soldered before the examining board was the first piece of metal work they had ever done, and one man acknowledged that he had never had a blow-pipe in his hand before. The colleges may say that this evidence is not trustworthy, as it comes from men who, having made a poor piece of work, are trying to throw the responsibility on the college. This might have more weight if it were not for the fact that the story comes from so many different graduates and is so amply corroborated by the work they do at the examinations. If you will carefully examine the specimens which I herewith submit, I think you will come to the conclusion that there are reforms needed in this direction. These have been selected and mounted by Dr. Barlow, who has charge of the mechanical department of the New Jersey Board, from work done within the last year as part of the practical examination required from each applicant. Have the men who did this work received a proper education to enable them to practice dentistry?

I think this will prove to your satisfaction that in some cases the practical side is being sacrificed to the theoretical. That others have noticed the same thing is shown by the following extract from the report of the Committee on Practice of the New York State Society, read at Albany, May 8th, 1895. "Our institutions of learning should take heed that the manual skill of their graduates does not suffer on account of increased theoretical training." The colleges may claim that every student has to submit a satisfactory piece of metal work as part of his examination and a prerequisite to graduation. True, but do they inquire carefully into the question of who made the piece? That, however, is part of the other story I am coming to later.

Leaving the mechanical department for the operative, we perhaps find an improvement. But, does not the effort to swell the college treasury overbalance the educational features? Are not many teeth, which by proper treatment could be saved, sacrificed to make way for other work that will pay better, thus doing injury to patients and depriving the student of an important means of education? How many students, when they graduate, are really competent to contend with the complicated cases of pulpless or abscessed teeth? If any of you will stop and think of the many difficulties you have had to contend with and master for yourselves since you commenced active practice, that could have

been greatly simplified by proper instruction from a demonstrator during your collegiate course, you will better appreciate the point I am trying to emphasize.

Is it not just as important that there should be a competent corps of demonstrators as of lecturers? Now, as a rule, there is one head demonstrator whose duty it is to apportion the patients and handle the gold and cash, which occupations leave him little time to assist and advise the students in their work, these latter functions being left to undergraduates, who are appointed assistant demonstrators. If the colleges would provide a sufficient number of first class demonstrators to be constantly on hand during clinic hours in order to personally instruct students in the correct diagnosis and treatment of cases, the percentage of failures before the examining boards would be materially decreased. These remarks will apply equally well to either department of the practical education in our institutions.

While on the subject of college clinics I cannot resist again alluding to the matter of fees. The present system in many institutions of having fixed prices for operations, places them about on a par with the so-called "associations" which have done so much to lower the standard of dentistry in the public mind. In both cases the bulk of the work is done by inexperienced and incompetent men; in the associations, because that kind of help comes cheap; and in the colleges, because the workmen are students. These methods have taken away any right which the clinics might once have had to be called free.

One means of cementing the colleges and the profession more closely together would be for the former to return to the old method of simply charging for the material used and making the clinic a dispensary in the true meaning of the word.

The method of procedure in the mechanical examination before the New Jersey Board is as follows: Every candidate is required to make a metal plate, band it, grind and back the teeth, and invest ready for soldering before the Board. Sometime since it became apparent that in a great many instances the character of the preparatory work and the final soldering differed so markedly that it was impossible that the same person should have done both. This led to an investigation and it was found that there were persons who made a regular business of supplying students who were to appear before the Board with plates ready

for soldering. It was also found that these same persons were in the habit of making the graduating cases for students in the colleges, charging them different prices according to style and finish. The Board met this difficulty by requiring each applicant to make an affidavit stating that he did all the work on his plate himself, without assistance from any one.

The fact that a student can buy a plate, present it and have it accepted as his own work in college, certainly confirms my previous statement as to the lax way in which the clinics are conducted. A demonstrator in the mechanical department certainly should know whether a graduating piece was made in the college laboratory or not. But worse even than this comes the report that in some cases the demonstrators have themselves made these plates for the students; they, of course, being paid for the same.

Another reported condition of affairs in one of our colleges seems to me, if true, to deserve such unqualified disapproval from the profession that a continuance of such practice will henceforth be impossible. It is, in short, that a certain dental house holds such a large interest in one of our colleges that the students say they dare not buy instruments from other houses, because by so doing they would jeopardize their chances of graduating. If this report is true, taken in connection with the other matters which I have laid before you, is it not time that the profession at large insisted on knowing more about the way in which our institutions are conducted, and, where reforms are needed, insist on their not only being introduced, but lived up to?

In conclusion, I wish to state that no charges in this paper have been aimed at any particular college; the defects mentioned being distributed among the different institutions. There are some, however, that may, perhaps lay claim to all. On the other hand, there are certain colleges to which these criticisms are in no way applicable.

Let the Profession, the Colleges, and the Boards unite their forces and work together in this matter, and a higher standard is bound to result.

A CURIOUS ACCIDENT.—A woman in Elizabeth coughed up a wisdom tooth which had been lodged for three months in one of her bronchial tubes, and which had found its way there immediately after it was extracted and while she was under the influence of nitrous oxide gas. The name of the careless dentist is, fortunately for him, not given.—*Medical Record*.

Digests.

Dr. G. V. Black's Articles in the Dental Cosmos, 1895.

AN INVESTIGATION OF THE PHYSICAL PROPERTIES OF SILVER—TIN ALLOYS. A series of experiments has been carried on by Dr. G. V. Black, during the past year, to investigate the value of amalgams as filling materials for human teeth. The experiments have been made with pure silver-tin amalgams, and with those made of silver and tin as a basis, with an addition of small quantities of various other metals—gold, platinum, iridium, copper, zinc, bismuth, etc.

The specimens for use were furnished by many prominent dental manufacturers, and made of pure materials. The proportions ranged approximately from sixty parts of silver with forty parts of tin, to forty parts of silver with sixty parts of tin, the alloys being mixed with mercury in proportions ordinarily ranging from 30 per cent. of mercury with 70 per cent. of alloy, to equal parts of each by weight.

Careful experimentation proves the silver-tin amalgams to be amomalous among metallic compounds in being at the same time very brittle and very ductile. If struck with a hammer they fly to pieces, but if subjected to a comparative light stress, either continuous or remitting, they may be pressed out into thin laminae, or moulded into any form without breakage.

A careful study of these properties was made with the use of specially constructed instruments, and the effects of stress accurately measured. Under a stress of 200 to 300 pounds the amalgam crushes, but if a stress of 25 to 100 pounds is maintained it gradually yields. This property of yielding under stress Dr. Black calls the flow. It is different from the "flow of solids" in that it is continuous as long as the stress is maintained, even if there is no increase of stress. Examinations and experiments with pure silver and pure tin, and with an alloy of the two in equal parts, prove conclusively that this property of flowing results not from the combination of the two metals, nor from either one alone, but from a combination of the two with mercury.

Experiments with amalgams mixed and used as different dentists mix and use them, with various methods of manipulation, gave astonishing variations as to the flow. Pure silver-tin amalgams were found, under careful handling, to flow from $2\frac{1}{2}$ per cent. to 10 per cent., but the addition of a small percentage of copper diminished the flow. The crushing strength of the alloys in general use is sufficient for the stress brought to bear in mastication. The important test of an alloy is its resistance to change of form.

Under a series of more accurate experiments, where the formula of each specimen used was known, the alloy and mercury both weighed, the amount of mercury lost in mixing and in the process of wringing through muslin, the percentage of mercury left, all being recorded, and the amount of force used in filling and packing carefully noted, gave more regular results. It was shown that the strength of the mass depends in great measure on the even distribution of the mercury, and that violence in any form weakens the product. Even burnishing of fillings is therefore to be avoided, and hand-mixing, instead of mixing in a mortar, is to be preferred for this reason.

Experiments with ivory and bone as artificial cavities for experimental fillings have proved unsatisfactory, as these materials expand and contract, being influenced by the moisture in the atmosphere, and it is impossible to accurately measure changes in filling-materials in cavities whose walls are themselves subject to variations. Therefore, a set of steel tubes for artificial cavities, and special instruments for accurate measurement, were devised for further experiments, that results might be compared. Amalgams were found to first set hard, generally with an accompanying contraction, then after several hours they soften and flow, and at the same time expand. Afterward a gradual contraction occurs.

Experiments involving the principles of spheroiding of amalgams demonstrated accurately that the tendency of amalgams to pull away from the margins of cavities is due to contraction, and not to a tendency to spheroid, as has been supposed.

Contraction and expansion of amalgams seem to depend on many factors:—the components of the alloy, the percentage of mercury, the manner of mixing, the mode of handling, and the oxidation of the alloy.

The addition of copper in small quantities to the silver-tin amalgam neutralizes the tendency to contraction and expansion to a considerable degree. The addition of small quantities of other metals has not yet been thoroughly investigated.

In silver-tin amalgams containing less than 60 per cent. of silver a contraction takes place during the primary setting of the mass, but after reaching a proportion of 60 per cent. the primary contraction disappears. Alloys which contain more than 60 per cent. of silver show no primary contraction, but at 80 per cent. of silver and 20 per cent. tin an immense expansion occurs.

As to the difference in the cut of alloys, those cut fine gave an amalgam which worked smoothly, but flowed badly, while the coarse cut alloy made a granular mass which did not work so easily, but which flowed less. The effect of oxidation on the cut alloy, which occurs even on simple exposure to the air, was very marked, both upon the contraction and on the amount of mercury required for mixing. Alloys containing from 60 to 65 per cent. of silver, which did not shrink nor expand when used fresh, when oxidized from any cause contracted as much as nine ten-thousandths of an inch for each test. The effect of oxidation was practically the same for all formulæ used; those which shrank when used fresh shrank more when oxidized.

Careful trial has shown that if an alloy is mixed with an excess of mercury, kneaded into a pliant mass, and then wrung out through muslin, always as nearly as possible with the same amount of force, a certain percentage of mercury will be retained, differing with the different formulæ of the alloys. A sufficient excess of mercury must be used to make a pliant mass, and it must be wrung out before the setting begins. If too little mercury is used an *excess* will be retained, but mixing considerably too much mercury before wringing does not affect the result. The freshly cut alloy retains a certain percentage of mercury against the wringing process, but oxidizing the alloy, whether naturally or artificially, changes the result. For instance, the alloy, 65 per cent. silver, 35 per cent. tin, when oxidized, requires less mercury than when used fresh. A good working mass can be made with a smaller quantity of mercury at about 60 per cent. of silver than with any other proportion.

Different methods of manipulation affect the result mate-

rially. An even and moderately severe pressure, directed upon every portion of the mass, without kneading it, tends to prevent shrinkage at certain points. Gaps in the margins of fillings, caused by shrinkage, are not closed by subsequent expansion. Using a spoon-shaped instrument and cutting out the free mercury raised during packing, has a better effect than any other method, as it requires less violence. In packing and filling, the part of the amalgam put in last is found to contract most, causing a warping of the mass, so that the upper surface of the filling becomes concave and the margins pull away at the top, while the bottom surface, especially if large and flat, becomes convex, thus pushing the filling out of the cavity. Dr. Black considers his investigations far from complete as yet.

The Pacific Stomatological Gazette for January, 1896.

"DENTAL JURISPRUDENCE—MALPRACTICE," by H. R. Wiley, A. B., San Francisco. It sometimes happens that a fracture of the maxilla results from the extraction of a tooth, and the records of our courts show that many civil suits for damages have been instituted on that ground of complaint. If the fracture has been caused through negligence or ignorance, it is certainly a proper cause of action. Of course, the plaintiff must make out his case. That is, he must prove that the injury actually exists, that it was caused by some act or omission on the part of the defendant, and that it was due to malpractice. He must also prove the extent of the injury. The plaintiff may be under an honest misapprehension as to the existence of the injury. When the tooth was extracted he saw what appeared to be a piece of bone attached to it, and very naturally inferred that his jaw had sustained a fracture. Unusual trouble, from cold or other cause, having followed the extraction, he too hastily concluded that he had been the victim of malpractice, when a careful and scientific examination might have disclosed the fact that it was only the fracture of the alveoli septum. The composition of the cementum is very similar to that of the bone, and occasionally the roots of the tooth become attached to the septum and fracture it in course of extraction. Such an occurrence shows no want of care or skill on the part of the operator, and judgment for his costs should be rendered in favor of the defendant.

Again, a fracture of either plate of the alveolus may be due to the extraordinary attachment thereto of the roots of the teeth; or the bones may be unusually weak and thin, or may have been weakened by necrosis. Also, during the spreading of the alveolar plates caused by extraction, a fracture of either plate is likely to occur, if the roots of the tooth chance to be unusually divergent, and wider than the necks, without fault of the operator.

In neither of the cases referred to above could there be a finding of malpractice, supposing, of course, that a proper defense is made. If the patient, by a change of position, a sudden movement or any other act, contributed to the injury complained of, judgment ought not to be rendered against defendant.

The facts relied upon as a defense in either of the several cases referred to, must be clearly presented and carefully proven, or the judge or jury, not having technical knowledge of dental surgery, may easily fall into error as to the real nature and cause of the injury complained of, and consequently arrive at a wrong conclusion as to the defendant's liability. The extracted tooth itself may be valuable in evidence, and it may be necessary for the judge or jury to make a careful inspection of the part alleged to have been injured.

Such exhibits, accompanied by a full and clear explanation by the defendant, may be sufficient to convince the jury that the charge of malpractice is without foundation. It will always be safest, however, to corroborate this line of evidence with expert testimony, by calling to the witness-stand some other dentist who has first been made acquainted with the facts of the case.

"SYPHILIS OF THE MOUTH," by J. G. MacGowan, M. D., Los Angeles, Cal., read before the Southern Calif. Odont. Society, Oct., 1895. The interest to the dentist in being able to definitely diagnose any appearance of syphilis about the mouth is a double one:—The protection of self against contagion; the avoidance of the exposure of his clients to infection by the use of instruments or dressings not sterilized. Though recognition of the infectious lesions of acquired syphilis is paramount, yet it is not without interest to dental surgeons to be able to trace the influence of inherited syphilis upon the growth and development of the teeth, and also to understand the rapidly destructive and frightfully defor

mative nature of the lesions peculiar to late syphilis. There are three truths relating to buccal syphilis which may be deemed axiomatic: First. Certain lesions, well marked and distinct when present, always and invariably indicate the presence of syphilis; Second. Syphilis is frequently non-venereal and innocently acquired; Third. The victim is frequently unaware of the character of his malady. Remembrance of the first of these will prevent your judgment being warped by the social position of your clients. Attention to the second will keep you from cruelly misjudging good women, and sometimes good men. Consideration of the third will account for the apparent moral callousness of people whom you may see spreading the disease by their foul and poisonous mouths. For our purposes, the mouth is all of that mucous space included between the lips anteriorly and the posterior pillars of the fauces, together with the various organs contained therein.

Certain cardinal characteristics of syphilis occurring upon the skin or mucous membranes have been formulated by Kaposi:— First. The syphilides are sharply defined, dense and uniform cellular infiltrations of the papillary body and the corium, and differ from one another only in size. Second. These cells are not fitted to undergo permanent organization into connective tissue, but always undergo involution and disappear by absorption or by purulent degeneration. Third. The syphilitic infiltration always enlarges and disappears in the same direction, centrifugally; hence, the peripheral parts are relatively the most recent, and exhibit all the characteristics of the fresh infiltration. The oldest parts occupy the center and are the first to disappear. To the initial syphilide, the chancre, as it occurs about the mouth, we will first give our attention. Most usually the point of infection is the lip, by preference the lower lip, at its vermilion border, for this is most exposed to the injuries or abrasions through which infection takes place; chaps, cracks, the broken vesicles of herpes, bites, burns from pipes, cigars or curling irons, cuts from broken drinking glasses, razors or carelessly handled dental burs or gouges. Any sore occurring in this situation, with scant secretion, painless or only moderately painful, with a circumscribed indurated base varying in grade from that of parchment to cartilage, which refuses obstinately to heal under the application of simple protective measures, but steadily persists while the days

run into weeks, becoming finally covered with a greyish pseudo-membranous deposit, is a chancre. Such sores are generally single; but multiple ones are not rare. When they exist they are due to the application of the virus simultaneously to several spots of abraded surface. Whatever their number or situation, they give to the lip a stiff and clumsy look not to be accounted for by the size of the ulcer. It is rather the sharply circumscribed and growing infiltration of the tissues which gives the characteristic appearance.

The diagnosis of typical cases of chancre of the lips need only to be made from cancer. The points of diagnosis to be remembered are well tabulated by Cornil: CHANCRE OF THE LIP. 1. Occurs at any age. 2. Usually insensitive. 3. Has a regular outline. 4. Is elevated. 5. Grows only a few weeks. 6. Sub-maxillary glands involved in second week. 7. Heals under mercurials. EPITHELIOMA OF THE LIP. 1. Seldom before middle life. 2. The seat of darting pains. 3. Irregular in outline. 4. Ragged and bleeds easily. 5. Grows many months. 6. Sub-maxillary glands involved only very late. 7. Not affected under mercurial treatment.

To this I may add I have observed that in labial cancer, usually over the peculiar waxy and curled edge of the ulcerated surface, may be seen climbing the distorted and twisted blood-vessels, and plunging into the depths of the growth to disappear as do the blood-vessels in certain diseases of the optic fundus. From herpes the lack of induration and the burning sensitive surface forms a sufficiently distinctive diagnosis. From inflamed fissure the painful character of the latter, and the lack of involvement of the lymphatics under the jaw, serve to guide us. Within the mouth cavity the most frequent seat of the chancre is the tip or anterior portions of the sides of the tongue, the tonsils, and the inner surface of the cheeks. In these positions some of the distinctive characteristics of the chancre are so modified that the diagnosis is not always readily assured. Relating to the tongue: If a single and insensitive ulcer or fissure upon its anterior surface persists for a week, refuses to heal under application of stick nitrate of silver, enlarges, extends continuously, develops an indurated base and becomes covered with a pseudo-diphtheritic membrane, it is a chancre. But many ulcers in this situation are

not chancres. We may have an ulcer due to the abrasion and irritation of a jagged tooth, the so-called dental ulcer. This disappears with the removal of the cause. It may be an ulcerating gumma. If it is, we can always elicit a history of a preceding tumor under the mucous membrane, opening in the center, the development of an ulcer in a tumor and not of a tumor surrounding an ulcer. It may be tubercular. If so, it has commenced upon the surface as a number of pinhead-sized, yellowish or pearl-colored buttons of miliary tubercle, raising the mucous membrane. Such nodules present a tendency to break down separately, running together as irregular and superficial painful ulcers with worm-eaten bases. I have once seen the symptom which, when present, is so characteristic of tubercular ulcers, that of uniting at the bases while having bridges of sound tissue on the surface, underneath which a probe might be passed from one ulcer to another. Besides, in tubercular trouble there is always evidence of tubercular cicatrices upon the neck, or tuberculosis of the larynx or lungs; or the bacilli may be found in the scrapings of the ulcers. In neither the gummatous nor the tubercular ulceration is there ordinarily enlargement of the submaxillary glands.

Chancre of the tongue can hardly be mistaken for cancer of the tongue. The latter is nearly always preceded by an indurated patch of leucokeratosis, or an old and much irritated dental ulcer. Chancre is rare upon both tonsils, and has been in all cases which have been observed by me presumptive evidence of osculatory immorality. Situated upon the tonsil it may be confused only with sarcoma. The latter is of much slower growth. The chancre reaches the limit of its size in, at the most, six weeks, and then subsides or becomes converted into a mucous patch. Again, the chancre has a crater-like excavation upon it from the beginning, and is accompanied early by the indurated enlargement of the sterno-cleidomastoid chain of lymphatic glands. Anywhere between six weeks and six months after the initial lesions of syphilis there appear the various manifestations of the disease upon the skin and the mucous membranes known as secondary syphilides. Those which concern us most are the moist and the dry eruptions in the mouth. Some observers insist that the first local sign of general syphilis is the appearance of an erythematous rash in

the mouth and throat, corresponding in color and just preceding in time the macular syphilides upon the abdomen and chest. These consider that the presence of narrow, dusky-red bands of inflammation along the border of the velum, and ending abruptly at the base of the uvula, is characteristic of syphilitic erythema. Though I have at times observed this brick-red erythematous arch in people, the victims of syphilis, its appearance has not been sufficiently distinctive for me to place any special diagnostic value upon it. Deville and Devasse first gave to the usually elevated, rounded, pink-edged, moist lesions with pearl-like surfaces, the name of muscous patches, from their manifest resemblance when situated upon skin surfaces to mucous membranes. These patches in the mouth, frequently the earliest to come and the last to depart, may at times be the only sign, after the chancre, which ever presents itself of syphilis. But their danger to you lies in that the smallest and most innocent-looking patch may convey the poison of the most virulent attack to its recipient.

I know of no lesion of syphilis which occurs in males and is absent in females. However, these secondary syphilides of the mouth are less common, and commonly less severe in woman than they are in man, for she keeps her mouth cleaner than he does, seldom uses tobacco, and less frequently uses raw spirits and irritating sauces.

The changes observed are due to vascular dilatation, infiltration of embryonic cells and a fibrinous exudate loaded with young cells and pus corpuscles. It is to their deposit upon the surface that the common opaline appearance of the moist greyish pellicle is due. These patches in jaundiced individuals partake of the yellow stain of the rest of the tissues. They are always preceded by surface redness, and they present a tendency to the modified circular forms peculiar to syphilis, and are accompanied by hypertrophy of the tonsils. This membrane is thin and may be removed only with difficulty. It is distinguished from diphtheria by the absence of the inflammatory symptoms and the physical depression, and by thicker, tough, buckskin or buff-colored membrane of the latter; from thrush by its raised white patches with a red areola, which consists of pultaceous matter like curds, breaking readily upon being touched, and containing the fungus, *oidium albicans*. The characteristic shape of these patches, and

to some extent their appearance, differs with their situation. Painless usually, when at the angles of the mouth, or when irritated by tobacco or a jagged tooth, they often become very painful. Without appreciable induration, when arising upon the surface of a disappearing chancre the suppleness of the tissues beneath the patch is much interfered with. Certain portions of the mouth are most prone to be the seat of the mucous patch; upon the inner surface of the lips and the cord between the two halves of the upper lip; at the angles of the mouth, where it presents a peculiar diagnostic feature; upon each lip a patch joined at the commissure by a deep rhagade, which is painful and bleeds easily, the inner surface opaline, the outer a granulating sore covered with a crust forms a picture to be remembered and an object to be avoided. The patches upon the dorsum and the tip of the tongue are uneven in appearance, influenced by the varying sizes and length of the papillæ. Those at the edge, following the natural folds of the mucous membrane marking the muscle septa beneath, present sometimes an exaggerated ridginess. Far back upon the tongue large papular or warty patches sometimes occur. These grow and extend to the whole superior surface. The grossly exaggerated papillæ are separated by deepened ridges, running across and along the roughened tongue. Its opalinity is obscured here and there by the shaded brown, yellow and gray stainings of food and medicine, all of which give to the organ the appearance so happily described by Fournier as "the toad's back." I have seen these grow and crack, exuding a malodorous sanious fluid, and subdivide while growing, until the mouth became a nasty hole filled with a tongue that, for its poisonous state and aspect, might well be the despair of devils. These syphilides now under consideration rarely ulcerate; when they do the seat of such ulcer is usually at the angle of the jaw where the teeth impinge upon the tongue.

Upon the under surface of the tongue, and the gums, particularly those of the lower jaw where teeth were lost, I have sometimes met with another form of mucous patch differing altogether from those so far described to you. It is papular, round, elevated a millimeter or two, covered with a yellowish-gray and closely adherent membrane, which when removed by friction leaves a bleeding surface, and under the microscope consists of fibrin, pus

corpuscles and epithelial debris. In these cases, three only, the persons were tobacco users, never made a toilet of the mouth until instructed by me, and had all of them well-pronounced general syphilis. For purposes of distinction these may be classified as diphtheritic mucous patches. Upon the tonsils and the pillars of the fauces mucous patches exist earlier and later than they do elsewhere. Though insensitive, the patient often not complaining of them when their appearance is frightful, they are very apt to ulcerate from irritation. These ulcers, owing I think to the structural formation of the tonsil, are likely to be kidney-shaped, but covered with the pearly pellicle so indicative of their origin. Follicular tonsilitis is nearly always an accompanying malady, due to the inflammatory glandular hyperplasia. Indeed, it has seemed to me that without this follicular disturbance we would rarely have in these mucous patches of the tonsil any ulceration whatever, for when they disappear it is without scars, leaving only the distended follicular mouths to remind us of the process. The palato-lingual fold is frequently the seat of the mucous patch. In this situation, which is practically the commissure of the sphincter of the throat, they are commonly accompanied by a burning, rough and scratching pain, often very severe. My advice to you is, always in working about the back teeth of any person you may suspect of having infectious syphilis, to carefully examine the oral commissure and the glosso-tonsillary folds for mucous patches. Syphilis of the palato-tonsillary region is not at all constant in its manifestations of pain. Great pain is sometimes an accompaniment of small patches, and no pain not unfrequently is seen when the diseased area is great.

The region posterior to the pillars of the fauces do not concern the dentist, but, in passing, I may say that the syphilide we have had under discussion rarely occurs posterior to them. In the words of Fournier: "The pillars of the soft palate are the pillars of Hercules for the mucous patch, and this is the more inexplicable, as this region is most prone to tertiary accidents." The regions we have mentioned are the usual seat of the mucous patch; but it is to be remembered that it may and sometimes does occur upon any other portion of the mouth. There are certain characteristics of all of the forms of mouth syphilis to which I must direct your attention. These remembered will assist you

materially in forming your judgment as to the character of any sore you may have before you in a mouth: First. They are nearly painless, unless irritated mechanically or chemically, or by tobacco; Second. Any irritation of them provokes a great secretion of saliva. Indeed, where they are numerous, a kind of salivorrhoea is often present, the patient dribbling saliva during his waking and sleeping hours; Third. They all tend not only to disappear spontaneously, but also to recur indefinitely, more especially in users of ardent spirits, or abusers of tobacco, or those who chew toothpicks and gum; Fourth. They all have the modified circinate form seen in syphilides elsewhere.

Though tertiary syphilis may effect any of the structures entering into the formation of the mouth, it is upon the tongue and soft palate that its ravages are principally spent. The tongue may be attacked by a general infiltrative inflammation: First, superficial, the small round cells being packed into all the tissues lying outside of the muscle bed; or second, deep, the same process extending into and between the muscles of the tongue. The superficial form of syphilitic glossitis, when it occurs, makes its appearance about the fifth year after infection. The induration produced may be uniform, spreading over the entire surface of the tongue, a veritable hyperplasia, or it may be confined to a number of nodular patches. The surface of these latter is smooth and glossy-like, and for the same reasons as the peculiar mucous patch, which I have shown you upon the patient R——. Syphilitic glossitis is slow in developing, and resists treatment. It may last for many years in spite of all treatment, finally ending in atrophy. The tongue becomes stiffened and interferes with talking and swallowing; indeed, it is the interference with these functions which first draws attention to its condition. Sometimes it grows so large as to require surgical interference. Any chronically enlarged tongue, unless proven otherwise, may be regarded as syphilitic.

The British Journal of Dental Science for January, 1896.

“ORAL SURGERY,” by Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S. Eng. Tumours of the Palate. These are not common, but they are of many different kinds. They present a general resemblance to tumours of the salivary glands. They

are more common in the soft than in the hard palate, and on the left side than on the right. Most of them grow slowly, are painless and quiet, and therefore often unnoticed for many years.

Dermoids. Dermoid tumours are occasionally met with in the middle line of the hard or soft palate. They vary in size from that of a hazel-nut to that of an orange; they are often pedunculated. In some cases the tumour is solid and is covered with skin bearing hairs and sebaceous glands, and in others the tumour forms a cyst, the inside of which is lined by skin. In one recorded case the tumour was no less than eight inches long and five or six broad, and protruded from the mouth of a newborn child, causing great impediment to respiration. The tumour contained rudimentary limbs and generative organs and four inches of intestine, as well as nodules of bone and cartilage. Small pedunculated dermoids may be easily ligatured and removed. The larger tumours may necessitate a very formidable operation.

Epithelial Pearls. These are minute bodies consisting of concentric laminæ of horny epithelium; in some the epithelium forms onion-like layers without any tendency to cornification. They are very commonly found in new-born children, situated in the middle line and near the posterior margin of the hard palate, in the alveolar processes, and on the anterior surface of the gums; they are also found in other parts of the body at the lines of reflection of epithelial surfaces. They are produced by the retention and subsequent moulding of shed epithelium in the recesses of sebaceous glands, in mucous crypts or in folds of epithelial-covered surfaces. According to Bland Sutton, those pearls found in the middle line of the palate are the result of inclusion or sequestration of portions of epithelium in the process of fusion of the palatine processes of the two maxillæ, but Kanthack has shown that they are due to ingrowths of epithelium resembling the enamel organ and can always be traced to the surface. It is possible that the small supernumerary teeth sometimes found lodged in the mucous membrane over the meso-palatine suture are formed in this way. Epithelial pearls are only of pathological interest; they produce no symptoms and do not require treatment.

Cysts. Cystic tumours of the palate are very rare. In addition to the dermoid cysts already alluded to, a few cases have

been observed in which dental and dentigerous cysts have made their way toward the hard palate, producing a fluid tumour in that situation. Jourdain has recorded a case of blood cyst occupying all the left half of the palate.

Vascular Tumours. Tumours composed of dilated veins like nævi have been observed on the palate; they are of a purple or livid tint, and of a soft doughy feel; they have a tendency to bleed, and may vary in size from time to time. Aneurysms of the posterior palatine artery have occasionally been met with. In most cases they have been the result of injury. Electrolysis is the best means of curing these tumours.

Polypi. Polypoid growths of the palate are delicate out-growths of connective tissue attached by a slender pedicle either to the uvula or to the soft palate. Sometimes they are symmetrical. They do not occur on the hard palate. Their surface is covered by stratified epithelium and is finely wrinkled, or roughened with minute filiform papillæ like those of the tongue; their lymph spaces are well developed and their blood vessels large. They are commoner in men than in women, and are very seldom met with in childhood. They may exist for years without producing any symptoms and may be found out only by accident. Sometimes they produce a tickling at the back of the throat and repeated efforts at swallowing. They should be snipped off with scissors.

Papillomata. These are more common on the soft palate than on the hard, but sometimes they may extend over the whole palate. In microscopic structure they resemble other papillomata; sometimes they are pedunculated, and sometimes they are sessile or attached by a short broad pedicle. They often grow without discoverable cause, but are sometimes of syphilitic origin. The symptoms are the same as those of polypoid tumours. They should be removed with knife or scissors; the bleeding which follows removal may be very free, but can be controlled by pressure or by the actual cautery. Caustics are of little or no use.

Adenomata.—The term adenoma, as applied to tumours of the palate, has a clinical rather than a pathological significance. It means a tumour slow in growth, innocent in nature, firm, limited, and, as a rule, shelling out easily. Adenomata are equally com-

mon in men and in women. They occur about puberty and between the ages of forty and fifty. They are much more common in the soft palate than in the hard. Their growth is extremely slow and they produce so few symptoms that they usually remain a long time without giving any trouble or even without being noticed. They are rounded or oval with their long diameter from before backwards. They are usually elastic, sometimes so much so as to give the impression that they are fluid, but sometimes they are hard and tough. The mucous membrane covering the tumour may be thinned from pressure, but it very rarely adheres or ulcerates; it generally remains healthy, freely movable and unbroken over the growth. The structure of these tumours is extremely complex; they contain masses of epithelial cells without any very definite shape or arrangement, part being developed into gland tissue, part breaking down into irregular tracts of a hyaline granular material, and part forming cell nests or epithelial pearls. Blended with the epithelial structures is a quantity of embryonic connective tissue, myxomatous tissue, or fully formed fibrous tissue.

Treatment. Adenomata can nearly always be enucleated. For this purpose sufficient anæsthesia can often be obtained by injecting a 2 per cent. solution of cocaine under the mucous membrane. The mucous membrane should then be incised, taking care not to wound the tumour itself. If the growth is in the soft palate, enucleation is greatly facilitated by passing a finger into the nasopharynx and pushing the soft palate and the tumour forward; hæmorrhage may be stopped by continued pressure.

Sarcomata. Those found in the palate are mostly of the round-celled variety. They are rarer than the adenomata; they occur with equal frequency in men and in women, and more often in the soft palate than in the hard. They are most often met with in persons of forty or older, and do not occur in young subjects. They grow much more rapidly than the adenomata. They are malignant, although the degree of malignancy varies. Some are distinctly encapsuled, whilst others are devoid of capsule. Those tumours which extend downward into the region of the tonsil are more malignant than those which advance forward lying *in* the soft palate and *on* the hard palate; the latter are more likely to be encapsuled.

Treatment. If the tumour be not very large, not of rapid growth, and not adherent to the tonsil or pharynx, it should be removed by enucleation. But if the tumour is of more rapid growth, and extends far back toward the tonsil and pharynx, a much more extensive operation will be required, very likely necessitating tracheotomy and ligature of the carotid. In such a case the surgeon must carefully consider the case in all its aspects, and must not embark on such a severe operative procedure unless there is a reasonable hope of removing the whole disease.

Carcinomata. Carcinoma of the palate is a rare disease. There are two varieties, viz., squamous epithelioma, which begins in the surface epithelium, and medullary carcinoma, which begins in the deeper parts of the mucous membrane. Squamous epithelioma usually begins in the gum and invades the palate secondarily. Sometimes it ensues upon long standing psoriasis or warty disease of the palate. The disease presents the same characters as epitheliomatous ulceration elsewhere, the glands are affected early and extensively, and death ensues in a short time. The medullary form of carcinoma differs from that just described in that a distinct tumour is formed which soon adheres firmly to adjacent structures, grows rapidly, and ulcerates in its centre. It is even more rapidly fatal than epithelioma. It is only seldom that these formidable tumours are seen early enough to give the surgeon a chance of performing a successful operation. A happy result can be hoped for only when the disease is diagnosed very early and very freely removed.

Cystic Disease of the Antrum. Small cysts, about the size of a pea or a marble, are sometimes discovered in the interior of the antrum in dissecting-room subjects; they have probably caused no symptoms during life. Similar cysts, when larger or more numerous, may distend the antrum and produce swelling of the face. According to Giralde, these cysts result from dilatation of the glandular follicles of the mucous membrane. They contain at first a clear viscid fluid, but later the fluid becomes flaky from the presence of cholesterine, or may become purulent. Cystic distension of the antrum was formerly designated "hydrops antri," on the supposition that the antrum became distended with mucus, due to blocking of the ostium maxillare. The symptoms of cystic distension of the antrum are almost identical with those of

dental or dentigerous cysts growing into the antral cavity, and it is but rarely that a certain diagnosis can be made until the antrum has been opened and explored. When suppuration occurs the symptoms are those of empyema of the antrum.

Treatment. The antrum should be opened through the canine fossa and the cysts scraped out. During the healing process the cavity must be kept clean by syringing with suitable antiseptics.

Polypi of the Antrum. These are somewhat rare. They closely resemble nasal polypi in structure, and the same doubt is entertained in both affections as to whether the tumour is of inflammatory origin or a true new growth. They are well supplied with blood vessels and consequently bleed readily on interference. In some cases they are semi-malignant or may be the forerunners of malignant disease. These polypi do not often give rise to definite symptoms of their own. They are most often discovered when the antrum has been opened and explored on account of prolonged suppuration. Sometimes, however, they grow to sufficient dimensions to cause distension and absorption of the walls of the antrum and encroach upon the neighboring cavities, especially the nose. The treatment consists in removing the polypi through a large opening in the canine fossa and scraping away the diseased mucous membrane with which they are connected.

Fibroma. Fibromata of the upper jaw may spring from two situations—the periosteum of the alveolus and that lining the interior of the antrum. It is probable that many cases described in the older works as fibroma have really been instances of fibrous odontomes which have escaped recognition. Fibromata arising within the antrum grow very slowly, but if allowed to remain may attain a considerable size and may cause much damage to the surrounding parts; the walls of the antrum become absorbed and displaced, allowing the tumour to escape from the antrum and to project into the orbit, into the nose, into the mouth, into the zygomatic fossa and under the cheek.

Enchondroma. Enchondromata of the maxilla are very rare. They occur in young subjects and may grow either on the surface of the bone or inside the antrum. They are of slow growth and innocent in nature, although sometimes recurrence may take place after removal. They are very hard and usually nodulated on the surface; on section they present close-set nodules or masses of

cartilage partly and irregularly ossified and intersected by more or less fibrous tissue. They may attain a great size and produce distension and destruction of the maxilla and other facial bones in the same manner as fibromata. Some of the enchondromata formerly described were probably examples of chondrifying sarcomata.

Osteoma. True osteomata of the maxilla are very rare tumours. Many cases hitherto described as such have been examples of leontiasis ossea, hard odontomes and ossifying sarcomata. Irregular outgrowths of bone are sometimes met with on the alveolar border, but they are of no clinical importance.

Neuroma of Infra-Orbital Nerve. Bland Sutton has recorded a case in which a neuroma composed of myxomatous tissue grew from the infra-orbital nerve and invaded the cavity of the antrum. The surface of the tumour was covered with a layer of mucous membrane furnished with a ciliated epithelium. The tumour had caused intense suffering.

Sarcoma. Sarcomata are the commonest and most important tumours of the maxilla. As in other bones they may be central or peripheral. Central sarcomata grow from the cancellous bone between the shells of compact tissue. They may be myeloid or round-celled in structure. Myeloid sarcomata are much rarer in the maxilla than was formerly taught, many cases thus described in our museums and in the older works being examples of fibrous odontomes containing a few osteoblasts, and sarcomata arising in the follicles of developing teeth. They usually grow in connection with the nasal process and occur in young subjects; they are of slower growth and are less malignant than the other varieties of sarcoma. When growing from the alveolar process and projecting on the gum they constitute the "myeloid epulis" already described. They may also bulge into the antrum, distend its cavity, and absorb its walls like other tumours. In some cases of myeloid sarcoma the blood vessels are so numerous that they cause the tumour to pulsate, and they give it a structure somewhat resembling erectile tissue; they are known as vascular tumours or vascular sarcomata. Sarcomata of tooth follicles are composed of round and spindle cells, with a few myeloid cells interspersed. They occur only in children and usually involve the germ of the first permanent molar. They are at first encap-

suled, but eventually reach the surface, ulcerate and give rise to hemorrhage. The neighboring glands may become affected. Peripheral or periosteal sarcomata may spring from any part of the maxilla. They frequently grow from the periosteum of the antrum, distending its cavity and behaving clinically like a central tumour of bone, although pathologically of periosteal or peripheral origin. They are fairly common on the gums and rare on the palate. In structure they may be either round-celled or spindle-celled; the latter variety often contains cartilage and bone. The maxilla may also be invaded by sarcomata starting in the nose, naso-pharynx or orbit.

Epithelioma. Epithelioma of the maxilla occurs in persons beyond middle life, usually about 45 or 50. It may start in the gum, the palate, or in the interior of the antrum. Epithelioma of the gum and palate has already been referred to. Epithelioma of the antrum may be primary or secondary, i. e., the disease may start in the antrum, or it may invade the antrum after having started in the gum or palate. Primary epithelioma is a rare disease; it forms a very vascular tumour of a villous nature which fills the antrum and rapidly perforates its walls in various directions, causing at the same time a certain amount of distension of the cavity, but not nearly so much as the sarcomata. It may be composed of columnar cells, like those covering the mucous membrane of the antrum, or of spheroidal cells, like those lining the mucous glands. Secondary epithelioma is nearly always of the squamous variety. It is a very insidious disease; no definite tumour is formed, and there is no distension of the antral cavity, but there is extensive and very rapid destruction of its bony walls. The disease is often first discovered on extracting a tooth with a piece of soft growth attached to the roots. The socket does not heal, but soon becomes filled with a fungating mass; it will then be found that the socket is in direct communication with the antrum, and that the latter is already diseased. To this disease the name "epithelioma terebrant" or "boring epithelioma" is often applied. In all forms of epithelioma of the jaws the disease is very rapid and the lymphatic glands in the neck are very extensively involved. The size of the lymphatic swelling may be out of all proportion to the primary disease, so much so that the patient is often led to seek advice on account of the glandular swelling, the

primary growth being discovered only on careful examination of the mouth. The enlarged glands are at first very hard, but they soon soften to such an extent that they may be mistaken for an abscess.

Diagnosis. To make a correct diagnosis of tumours of the maxilla is often very difficult, sometimes impossible. The history of the case must be carefully considered, the more rapid the progress of the disease the more likely it is to prove malignant. A careful physical examination must be made; the points to be especially noted are the condition of the cheek and the character of any swellings there may be on the face or inside the mouth, the condition of the hard and soft palate; the nasal cavity must be examined by means of a speculum and artificial light, aided, if need be, by careful use of the probe; in doubtful cases the finger may be introduced into the naso-pharynx to feel for any extension of growth in that direction. Sometimes the diagnosis may be cleared up in a doubtful case by extracting a tooth, and so either evacuating pus or other fluid, or bringing away a piece of growth which can be submitted to microscopic examination. An examination of the submaxillary glands should not be omitted.

Having made a thorough examination, it is necessary to determine (*a*) whether the swelling is solid or fluid, (*b*) whether it is innocent or malignant, and (*c*) its primary seat. (*a*) In cases of distension of the antrum by fluid the uniform enlargement of the cavity, the elasticity and even fluctuation which may sometimes be detected on palpation may suffice to make the diagnosis; but whenever there is any doubt on this head the antrum should be perforated with a small trocar introduced into the most prominent part of the swelling. It has happened that experienced surgeons have made the incisions necessary for removal of the maxilla and have then found out that the supposed malignant growth was nothing more than an abscess. (*b*) So long as the tumour is confined within the antrum much difficulty will be experienced in determining whether it is innocent or malignant, but when a malignant tumour has passed beyond the cavity of the antrum it grows with great rapidity, insinuates itself extensively amongst the bones of the face, creeps through fissures and foramina and encroaches on the orbital and nasal cavities. Obstruction

to nasal respiration and repeated attacks of epistaxis are suggestive of malignant disease. Early and extensive infiltration of the lymphatic glands points to epithelioma; in sarcoma they frequently escape infection. (c) When the tumour occupies the interior of the antrum, the buccal, nasal, palatine and orbital walls are expanded and the line of the teeth is often disturbed; but when the tumour springs from the malar bone, the teeth and palate are unaffected, the swelling being limited to the face and the sulcus between the cheek and the gum; when the tumour springs primarily from behind the maxilla it pushes it bodily forwards without deforming the outline of the bone itself, but it sometimes happens that such a tumour may find its way into the antrum and behave as one originating in that cavity.

The Ohio Dental Journal for December, 1895.

"FILLING A TOOTH WITH AMALGAM," by W. M. Jennings, D. D. S., Cleveland. For example, I will use a second lower left molar tooth, with a posterior proximal cavity extending considerably under the gum and involving about two-thirds of the crown. Of course, from the size of the cavity, the nerve would be exposed, and having removed it and filled the roots properly I would proceed as follows:

Prepare the cavity, having the edges smooth and the inside slightly larger than the opening; then fill it about two-thirds full with a good cement and allow it to harden. After this trim the edges of the cavity, so that no cement adheres to them, and also trim the cement inside just enough to leave a sufficient undercut and space to allow contouring of filling. Now select a screw matrix of suitable size for tooth (German silver or steel are the best, as they do not amalgamate) and put around the tooth, crowding down under the gum sufficiently to go below the edge of the cavity, but before tightening put another piece of German silver between the tooth and band matrix, also below the edge of the cavity; now tighten the band. Before putting in the filling take an excavator and trim the borders of the cavity and remove all roughness of edge next to matrix, if any has been caused by putting it on; we are now ready for the filling. Mix the amalgam very dry, having it resemble an almost dry powder, and carry it to the cavity with a small amalgam spoon; press a small

quantity into the cavity with a plastic plugger of the proper size; now with engine use a small size (smooth, round) burnisher and rotate it quite rapidly in cavity. Add more amalgam and use burnisher same as before, and do so until the cavity is full and the amalgam is quite hard, then with a larger burnisher rotate it rapidly over a piece of tinfoil placed on the filling. Trim the filling down and carefully remove first the screw matrix, then the other one. Now trim the filling as near as possible to the original shape of the tooth, seeing that the articulation is right. Polish at another sitting. A filling put in in this manner is much better and more satisfactory than by simply using hand pressure, and does not change position in crystallization as in the other way, as the tin takes up all excess of mercury, leaving the filling almost hard after it is inserted.

Zahnärztliches Wochenblatt for January, 1896.

"REPORT ON NARCOTIZATIONS IN GERMANY," by Von Gurlt, of Berlin, trans. by Dr. B. J. Cigrand. The last year has developed the following report and statistics relative to the several anæsthetics, as employed in medicine. Of the 47,515 cases of narcotization the report shows:—

	Cases.	Fatalities.	Doubtful.
Chloroform	31,803	23	8
Ether	15,712	5	1

It is indeed proven to be a fact that it is difficult to determine to a certainty the exact statistics of mortalities, with reference to the methods employed in producing the anæsthesia. It is especially difficult to ascertain whether the fatality is the result of the anæsthetic or of disease. In the report of the last five years the mortality stands: One death results from 1,275 Chloroform narcotizations; 3,143 Ether narcotizations; 10,662 Chloro-ether narcotizations; 50,044 Billroth's mixture narcotizations; 4,483 Bromoform narcotizations; 213 Pental narcotizations.

In recent years ether has been employed more frequently than chloroform, and has been used thirty-three times oftener this year than the preceding. The fatalities are relatively few, but the disagreeable after-results are very many. Many persons rebel against the inhalation of ether, as an unconquerable cough sets in, which increases the secretion of phlegm and saliva, and

bronchitis and broncho-pneumonia are observable as well. During the last year, of the 15,712 narcotizations produced with ether, thirty cases of pneumonia resulted, fifteen of which proved fatal.

The Dominion Dental Journal for January, 1896.

"THE SALIVA IN PROGNOSIS," by W. D. Cowan, L. D. S., Regina, N. W. T. In filling teeth, and in deciding what material to use, the temperament of the patient will certainly help us; so, also, will the saliva, I believe to a much greater extent than we generally accept, and that because it is a means of revealing to us, to a certain extent, the susceptibility of the patient to pain, and to these influences which produce pain, some patients, because of a blunted sense, being less subject to these influences than others. I have noticed in my practice that it is seldom that any of my patients in whose mouths the saliva is of a thick, mucid, stringy character, and gathers in little bubbles at the corners of the mouth when the lips are closed, or forms strings, as it were, from one lip to the other when the mouth is open, or who has a gummy, sticky, generally filthy looking deposit of greater or less extent from the saliva on the lips forming a light circle at the point of contact of the lips, are troubled with the pains, etc., after the tooth is filled. I have therefore become very confident of success in filling cavities in the teeth of such a patient by using only the ordinary precautions and following the usual procedure. On the other hand, if my patient is one who is gifted with an excess of saliva, and that of the most watery description, I would not attempt an all metallic filling, unless the cavity was of a very shallow nature. In other words, a filling that I would insert for the first patient, with only ordinary precautions, I would for the second patient use extraordinary precautions, probably a heavier capping, a combination filling, or at least proceeding as if I knew beforehand that the tooth was going to be subject to after influence.

"PYAEMIA AS A SEQUELLAE OF PYORRHOEA ALVEOLARIS," by A. E. Verrinder, L. D. S., Victoria, B. C. The following case may be regarded as a typical representation of the most persistent form of this disease. A gentleman came under my care some three weeks since, who had been for some two years past under treatment by different members of the medical profession. They

had all treated him for the same malady—malaria—and his last physician had ordered a complete change, in order to save the patient's life. Taking advantage of his vacation to have a troublesome molar attended to and filled, he consulted me to repair the wrong. Making a careful examination of the entire arch, which consisted of an unbroken denture, I found very little requiring attention. Remarking on the general state of his bad health, and noticing his cachectic condition, I touched the right chord, and he recited his miseries of the past two years, and his looks did not belie his words, he being resigned and prepared for the worst. On further inspecting the oral cavity I found a marked receding of the gums, and, probing, found a diseased process almost in its entirety. On pressure, a foul, unhealthy pus exuded—the first intimation I had of any odor. My suspicions now being aroused, I questioned him minutely in regard to the symptoms, and I found a febrile condition, with coated tongue and a temperature of 103° . He complained of headache, constipation, dizziness, sleeplessness, loss of appetite, and at times during the last twenty-four hours, nausea. Noting the conditions, I told him he had "no more malaria than I had," but was suffering from the absorption of this septic matter. To convince him I placed the hand-mirror in such a position as to give him a view of the exuding pus, furnishing evidence that something was wrong. He accordingly concluded to try my suggestions, with the result that after a vigorous and stimulative treatment—both systemic and local—combined with proper antisepsis, he began to improve rapidly, and a week since he journeyed home, expressing himself a strong and healthy man for the first time in two years.

At this writing I have received no further communication, so conclude all is favorable. No doubt, from the slovenly way in which he had attended to the hygiene of his mouth, matters had gone from bad to worse, and, having almost a perfect arch of teeth, considered he had no use for the services of a dentist, while the absence of any severe local symptoms led his physicians astray, and from the resulting absorption of this septic matter blood-poisoning had actually set in. This form of disease is very prevalent on the Pacific coast, whether from the influx of an already unhealthy people, or directly attributable to the climate itself, I do not know, but I do know that these cases are more or

less numerous with all British Columbia practitioners, although not so far advanced as to produce such severe constitutional symptoms, except in rare cases as stated. I feel justified in asserting that as many deaths occur from supposed malaria, when it is simply absorption of this septic matter and complications arising therefrom, as from genuine malarial fever.

The Dental Register for January, 1896.

"SOME THOUGHTS ON THE COMBINATION OF AMALGAM AND GOLD," by Dr. F. W. Knowlton, read before the Ohio State Dental Society, Dec. 4, 1895. I hardly need state that the same care and judgment are necessary in the application of this, as of all filling materials, if we would attain the results which are possible. It is when we make a use of filling materials other than that for which they were intended that they are unable to withstand the criticisms passed upon them, and are condemned in consequence of a lack of proper discrimination. Many times this combination can be used and better results follow than when gold or amalgam alone are relied upon, and in not a few cases in which it would be impossible to obtain the desired end with any other material. The plea that two sittings are necessary in order to complete such a filling no longer holds, for with good alloy and plastic gold such objections are overcome with entire success, although in some cases there is an advantage in allowing the amalgam to harden and complete with the gold at a subsequent sitting. The satisfaction of knowing that there is a perfect union between the amalgam and gold, giving you practically one material, is certainly something in its favor. I do not think that this kind of work will make slovenly operators of us, for the care necessary for its successful insertion is best realized by those who are familiar with its workings.

As an illustration, we will take a lower molar tooth, medium in texture, the proximal surface badly undermined, usually extending on the occlusal surface. Under existing circumstances we may dislike to put in amalgam, and hesitate to insert a gold filling, but if we can combine the two, retaining the better properties of each and avoiding the less desirable ones, is it not a good practice to follow? In such a case the different parts of the cavity are prepared consonant to the metal it is to receive, the

lower third, or possibly half of the cavity, depending somewhat on the size of the same, made suitable for an amalgam filling, the remainder of the cavity prepared for gold, this to be retained in place independent of the amalgam portion. Adjust the matrix securely, and at the lower third or half, as the case may be, perfectly, so there will not be the least danger of any of the amalgam being forced out around the matrix. Insert the amalgam in the usual way, filling the cavity rather full, and then remove it down to the proper amount. In this way the portion that remains will be quite hard and free from excess of mercury. Insert the plastic gold immediately, forcing it on to the amalgam with large points at the start, continue adding to the gold until it finally overcomes the mercury, then complete the filling in the ordinary manner. Remove the matrix and finish as you would any gold filling, noting the ease with which you are able to dress down the filling at the cervical margin without any great annoyance to the patient. The galvanic action which takes place as a result of the contact of the different metals causes the oxides and sulphides to be deposited on the amalgam more abundantly than when it is used alone, consequently this portion of the filling becomes quite black, which to many is a commendable feature, preventing recurring delay at that vulnerable spot, the cervical margin, whether mechanically, by filling the dentinal tubules, chemically, therapeutically, or by all combined we leave to each one's choice, but this we do believe, that the results obtained justify the means. There is no bulging, crevicing, or disintegrating of the amalgam under the galvanic action, for it remains just as left after it receives the finishing touches. The gold portion of the filling serves us in its own good way, preserving its own and the margins of the tooth as only gold can, under the strains to which the teeth are subjected in this location during mastication; and that important part of the operation, that of reproducing the original contour of the tooth, which tends to preserve the health of the surrounding tissues and makes a presentable piece of work in the eyes of the patient, can best be accomplished with gold. There is a pronounced diminution in the number of troublesome cases caused by the extremes of heat and cold, more so than when either metal is used alone under like conditions, but this must not be taken as an argument that we need not use precaution.

"DIAGNOSIS OF LESIONS OF THE HEART BEFORE ADMINISTERING ANÆSTHETICS," by W. H. Whitslar, D. D. S., read before the same society. It is a serious problem when anæsthetics are given, to whom and under what conditions they may be administered. This is of such importance that every practitioner should consider well the advisability of assuming the responsibility of the care of an individual in an unconscious state. The topic before us, therefore, opens up to my mind these questions:—(a) Do lesions of the heart interfere with anæsthesia? (b) Is diagnosis of the lesions an easy matter? (c) How may diagnosis be made? (d) What are the responsibilities?

Let us consider these questions. (a) Every human body has three circulating fluids, i. e., blood, lymph and chyle. The blood in man is proportioned to the weight of the body, as one is to thirteen, and this ratio is indicative of physical value aside from that of the vital. Of course we realize its worth in vital organization, because it is the provider of foods to the various tissues. It is also the scavenger that takes away impurities. It at one time or another contains everything about to become part of the tissues and everything which has ceased to belong to them. Morphologically, blood consists of plasm and corpuscles, red and white, also blood platelets. There is one white-blood corpuscle (leucocyte) for every five hundred red corpuscles. Blood being a circulating fluid, it is attended by three factors, i. e., its propelling force, fluidity, and size of vessels. All these, the heart, the plasm, thickened or thinned by numbers of corpuscles, and the lumen and area of vessel walls, modify the velocity of the blood current. Disturbances in either of these factors produce changes in the circulation of the blood. Now, if the circulation of the blood be disturbed by anything for an undue length of time, disease is the result. We may, however, cause a transgression from the natural course for a short time by emotion, change of position of the body (gravitation), over-indulgence in food, and not seriously affect the blood currents, but these would, if too pronounced, manifest unusual disturbances in the action of the heart; therefore, from so simple an illustration it is easy to conceive changes wrought in the blood by the introduction of a vapor that poisons its composition sufficiently to produce that state known as anæsthesia. These changes are rendered less agreeable to the

vital economy in proportion to the diseased conditions. Hence, lesions affect anæsthesia proportionately to their diseased condition, and less proportionately, to their compensated states found with lesions of the heart, simply because of the vitality of the organs being insufficient to resist greater ingress of unnatural bodies. The blood itself has most to do with anæsthesia, but this cannot move continuously without a propelling force, and if that be weakened you perceive the result.

(*b and c*) The greatest modifications of the circulating apparatus are to be found in the heart which forces blood to every nook and cranny of the body. The problem of knowledge of the diseases that affect the heart's action is partly physical, partly vital. Diseases of the circulatory apparatus are associated to a great extent with certain mechanical disturbances called lesions. This is owing to the fact that these organs subserve mechanical purposes and the regular rhythm is maintained by the pump arrangement and its distributory canals. To understand this class of diseases one must resort to physical methods of examination. Three of the great senses are used in this examination, which includes an *Inspection* of the size and form of body externally; *Palpitation*, feeling the movements of walls of the thorax as well as heart; *Percussion*, which relates the condition of density by sounds; and *Auscultation*, also relating to sounds more specific in character. The pulse plays a significant part, as I will illustrate later on.

In order to comprehend the various lesions which produce sounds or other defects, one must be familiar with the normal heart's action. Normally, there are six sounds of the heart, as follows: two vibrations of the auricular-ventricular valves, two vibrations of semi-lunar valves, and two vibrations of walls of large vessels. Generally speaking these are resolved into two sounds, the systolic or first sound, by the contraction of the ventricles felt at the apex of the heart, and the diastolic, or second sound, heard at the base of the heart, by the sigmoid valves of the aorta and pulmonary artery.

All these sounds are functional; if altered they become organic, and then it is that we perceive disease. Alterations may arise from fevers, fatty degenerations or hypertrophies. Want of synchronous action of the valves of the two sides split one or the

other into component elements, so that either sound may be re-duplicated. Any condition which increases the lesion, either in the systemic or pulmonary circulation, may disturb the balance of the two sides so as to dispose to a re-duplication of the sounds.

Cardiac sounds may be replaced by murmurs in the heart or outside of it. These have a blowing, rasping, sighing, and other characteristics. To determine these and their significance, two important facts must be studied, namely, their rhythm and their area of distribution.

The diseases of the heart and its valves, which produce mechanical disorders of the circulation by establishing abnormal relations, are of two kinds: obstructive and regurgitant.

Valvular disease, narrowing the size of the orifice, presents an obstacle to the passage of the blood currents, a condition better known as *stenosis*. On the other hand, when the blood flows back through an orifice of imperfect closure of the valves, due either to widening of the orifice or valvular changes, the condition is called regurgitation or insufficiency. Each of the orifices may be affected with one or both forms of the disease, but the frequency with which the several orifices are attacked varies. Generally the left side of the heart is affected by organic disease. The right is disturbed by lung diseases which cause increased tension leading to dilatation. All valvular diseases tend to lessen the arterial blood and there is an over-fulness and a stasis of the veins. From this there follow visceral disorders. This is often diverted by compensation to form a normal balance. In this we find that hyphertrophy assists by increasing the contractile power behind the defective valve. This produces greater tension in the vessels. Any failure of compensation is due to loss of nutrition, then occurs palpitation from slight exertion or excitement. From thirty to forty per cent. of all cases unassociated with other lesions are of *mitral* insufficiency. (Pepper.) Under chloroform, heart failure as a rule is due to fatty degeneration or mitral or aortic valvular lesions.

Now to diagnose these various lesions, endocarditis, myocarditis may be present and affect the tissues so as to produce alterations of sounds or conditions. Then, too, temporary affections of the heart may be produced by diseases of the liver. Murchison states that it is not rare to observe enfeebled circulation in hep-

atic disorder. It is believed by Faber and others that biliary acids have direct action upon the cardiac muscle. Independently of palpitations, syncope, and painful affections, nervous disorders, cephalalgia, insomnia, hallucinations, and so on, are secondary to hyphertrophy as a sign of disease. A common sign is palpitation. This is sometimes symptomatic of dyspepsia, therefore is not pathognomonic. It is on this account that many persons think they have heart disease, when it is only a reflex irritation from the digestive organs. It is often supposed by the ordinary observer that intermittency of the pulse is an indication of heart lesions. This is common in men of advanced age. It is a nervous trick and bears no significance if it is a pure halt of the heart. Intermittency with irregularity may be found in fatty degeneration of the heart or during fevers. In valvular disease the value of the pulse is best known by the use of the smyggraph, but this is generally impracticable because it does not assist as much as the physical diagnosis directly over the heart by the methods already mentioned. Now I mention these facts to show that diagnosis of lesions of the heart is not an easy matter, and that a knowledge of not only the heart, but lungs and visceral organs is required to comprehend fully cardiac diseases. By the fact of difficulty of diagnosis of these affections it is more apparent that responsibility is serious. The use of an anæsthetic is attended with appreciable risk and the life of the patient is endangered. Occasionally there is a death. Dr. William Pepper states that, "on the whole, sudden death is rare from valvular disease." This, if true, favors the ignorant man who uses an anæsthetic, and there is no doubt that it saves many lives that are jeopardized by ignorance. The law, however, does not recognise ignorance, even if the ignorant be careful; he must have a knowledge, then skill. •

The Dental Cosmos for January, 1896.

"COCAIN," by Dr. E. J. Hausle, Buffalo, read before the Union Convention of the 6th, 7th and 8th District Dental Societies of N. Y. State, at Binghamton, October, 1895. In excavating cavities I have had little success with the hydrochlorate in allaying pain, but the citrate gave gratifying results when used in one-fifteenth of a grain, although the sensation at first was of a stinging character.

For painless extraction I have tried the citrate and the oleate, but without success, and to me the only sure way is the use of the hydrochlorate hypodermically. The way the solutions are generally prepared seems almost criminal to me, as we have no knowledge whatever of what strength we are using. For instance, if we wish to use a four per cent. solution, eighteen grains of the salt are placed in an ounce bottle, which is then filled with water, accuracy being thus utterly disregarded.

Many times we hear complaints that cocain did not in any way lessen the pain of extraction, and the drug is condemned on that account. I have found that from two to four minutes should elapse between injection and extraction to obtain the best results.

During the past six years I have used cocain in my practice extensively, with both gratifying and alarming results. It is claimed by some writers that two-fifths of a grain injected hypodermically will not produce the desired result, but in a few of my cases two-fifths, and even one-fifth of a grain have given results which perhaps were not desired, owing to their alarming symptoms.

My first experience in this line was some five years ago, when I was requested to extract a root for a married lady. The gum was cleansed of all deposits by a solution of boracic acid, and then one-fifth of a grain of cocain injected on both sides of the root; immediately there was a collapse of the system, the skin became cold and moist, respiration almost suspended, and pulse feeble; all consciousness seemed lost.

Another patient, a young lady of eighteen, received one-fifth of a grain, injected around the gums to relieve the pain of setting a crown. Immediately she lost consciousness, pulse became erratic, at times ran as high as 140, and again so low that death seemed certain. Respiration seemed entirely stopped, and the eyes fairly bulged out of their sockets. After working some time with her she seemed to rally, only to pass off in the same state as she was, and this continued for several hours. During this time anesthesia seemed complete over the whole body.

Several other and equally interesting cases of mine I must omit for want of time. One day, while visiting a fellow-practitioner, he injected cocain, how much I cannot say. The tooth was extracted, and then the trouble began—cold, moist skin,

suspended respiration, an erratic heart, and vomiting. One drachm of whiskey injected hypodermically, artificial respiration, amyl nitrite, and one hour's work brought him around all right. All these patients were closely questioned regarding their condition, and I found that either the stomach was without food for at least six hours, or that (in the cases of the women) they were either pregnant or catamenic. Accordingly I started to experiment on rabbits, by injecting one-tenth of a grain. On those that were well fed it seemed to have little effect. The males withstood it better than the females. Two out of three of the females that were about to have young died. They were all well fed. Those that had not had food for twelve hours showed more alarming symptoms, and one male and one female died out of three each. Two bucks had no food for twenty-four hours and both died. In none of my experiments was any remedy tried, as I wished to see the exact result the drug would have. When I have desired antidotes I have used the very best amyl nitrite, atropia, whiskey and ether subcutaneously.

It is better to prepare the solution as it is needed, as it decomposes after three days, or it may be kept perfectly for ten days if held in solution in chloroform-water; but if solutions must be had on hand at all, try to have ten parts of antipyrin to one part of cocain. I have known but one death that was the result of cocain. On examination after death, the brain, lungs, and left side of the heart were filled with blood. Records show that in the past few years about fifty cases of poisoning are reported annually, of which on an average two result fatally.

"LOCAL ANÆSTHESIA AND OBTUNDENTS," by Dr. F. J. Woodworth, Rochester; read before the same societies. The author dealt with the various methods in vogue for obtunding sensation in the operations of tooth-extraction, excavation of hypersensitive dentine, and in pulp-devitalization. He contended that obliteration of of hypersensitiveness of dentine could be best attained by one of the three following methods, viz: by removing a portion of the protoplasmic contents of the peripheral ends of the tubuli and filling this space with some insoluble matter; reducing the temperature of the protoplasm until it was unable to conduct sensation, or coagulating the terminal endings of the fibrillæ by chem-

ical means. For the first-named purpose he advocated the use of absolute alcohol, which, because of its affinity for moisture, would thoroughly remove sensation by removing a portion of the protoplasmic elements during the process of desiccation following the use of the alcohol. When the dentine has been thoroughly desiccated by the alcohol and warm-air blast, an application of some resinous material in alcohol was to be applied and then evaporated *in situ*. The resin solution would permeate and permanently fill the tubular openings to a certain depth, and to that extent would prevent a recurrence of hypersensitiveness, though the structure beneath the impregnated area would still be normally sensitive. As a general escharotic obtundent the authority recommended carbolic acid applied after desiccation, though in sensitiveness at the cervical border, or when caused by abrasion, silver nitrate might be used to advantage; or, if necessary, carbolic acid could be followed by zinc-chlorid cystals in such cases. Refrigeration, where applicable, may be accomplished by rhigolene, methyl or ethyl chlorid.

The practice of filling sensitive cavities with oxyphosphate for obtunding purposes he had found to be unsuccessful in his hands.

For hypodermic injection in extracting he uses—

R—Alcohol, dr. vij;
Glycerol, dr. ij;
Carbolic acid, gr. x;
Camphor, gr. ss;
Atropin, gr. j;
Cocain hydrochlor., gr. viij;
Nitroglycerin, gr. j.

The carbolic acid acts as a coagulant circumscribing the action of the cocain. The atropin counteracts the toxic effect of cocain, but may be substituted with antifebrin twenty grains, or possibly menthol thirty grains, with good results. As an antidote the author recommended amyl nitrite as the best and most reliable.

Care in hypodermic medication must be exercised not to penetrate with the needle any of the larger blood-vessels or nerves. A cocain solution that was stronger than two per cent should not be used, and antidotes always kept in readiness for an emergency.

Discussion. Dr. F. A. Greene, of Geneva, said that, with regard to local anesthetics, it is a dangerous subject, and would better be left severely alone. The use of rubber plates never did one-hundredth of the harm to dentistry that the use of local anesthetics has. The great majority of them are secret, are bought and used without knowledge as to their components, and when trouble occurs the dentist knows nothing of what should be done to counteract the effects. Gas is both safer and more satisfactory for use in extracting. For obtunding dentine, the better way is to avoid preparations for diminishing the sensitiveness, and simply dry out the cavity carefully and use sharp instruments. If the cavity is wet, the bur will clog up and cause heat and pain from friction; and besides, the work cannot be seen properly. His plan is to apply the rubber-dam, with an apparatus which he showed, which consists of a small cup containing a coiled copper tube immersed in water. The cup has a lamp beneath it to keep the water hot, and the tube is arranged so a current of air is forced through it by means of a foot bellows or bulb. Using this to furnish a constant current of hot air, he can excavate the most sensitive dentine with almost no pain, and the cavity is absolutely dry and in the best possible condition for filling. The lamp being lit when the apparatus is ready for use, raises the temperature of the air from the normal of the mouth so gradually that the heat gives no discomfort. In many cases of nearly exposed pulps the heat will cause the thin layer of dentine over the pulp to crack open, and the pulp will be seen shriveled up like a shred of leather, and can be removed with no trouble or pain.

Dr. F. W. Low said he had had much experience with dental obtundents. He thought the best was arsenite of potash. It was said that it could be placed in a tooth and capped over with good result in sensitive dentine. He determined to try it, and asked a chemist, who told him he thought it might be used with safety and good effect. He procured a supply, and selecting such patients as had sensitive dentine, would place the potash in the cavity and cover it, leaving it in place for ten to twelve hours. He found that the dentine could then be excavated with little or no discomfort. Had never had any bad effect until his last case, a girl of fifteen. He had left the preparation in the cavity for twelve hours, as usual, but found it had no effect, so he made

another application and left it in twenty-four hours. Then the operation was performed and the tooth filled. Ten days afterward the patient returned with face swollen and suffering intensely. The filling had to come out, and he was still treating the tooth, but had little hope of ever saving the pulp. This experience would teach him to be a little cautious about leaving the preparation too long in the tooth.

TONSILS AND APROSEXIA. Mr. Downie, in a paper read before the Medical Chirurgical Society of Glasgow, alludes to the impairment of the cerebral function due to disorders of the nose and naso-pharynx. Guye, of Amsterdam, first described the condition which he styled "Aprosexia," and he attributed it to pressure being exerted on the lymphatics, preventing the current of the cerebral lymph and causing retention of the products of the chemical processes in the tissues of the brain. Mr. Downie alludes to the vacant expression of those suffering from post-nasal growths, who are of necessity "mouth-breathers," and he says that in addition to the look of stupidity the children are usually stupid and backward in everything calling for mental effort, and aprosexia is a marked feature in most cases. In Guye's first case a boy with complete nasal obstruction had been to school for a year and learned only the first three letters. After the removal of a mass of adenoid tumours from the naso-pharynx he learned the whole alphabet in a week.—*Brit. Jour. Dent. Sc.*

LIQUID AIR.—Professor Dewar has exhibited at the Royal Institution the working of a new apparatus for the production of liquid air with a degree of ease not hitherto attainable. Around a cylindrical vacuum-jacketed vessel Professor Dewar closely coils a metallic tube. This is inserted into a second vacuum-jacketed vessel, the result being that the metal tube is protected from external heat by a vacuum both inside and outside the coil. The inner end of the tube has a pinhole orifice which acts as a stopcock, and the other end is connected to a bottle of condensed air at a pressure of, say 200 atmospheres. On opening the stopcock of the air reservoir, the condensed air passing through the coil to the bottom of the outer vacuum vessel is enormously cooled by expansion on passing the pinhole. It has no mode of escape, save by forcing its way upwards between the metallic coil and the glass walls which surround it outside and in. By its passage the coil is powerfully cooled and the condensed air passing through it reaches the nozzle at a lower temperature than before. After this process has been carried on for a few minutes liquid air makes its appearance at the nozzle and collects in the outer vacuum vessel, where, in a few minutes more, quantities of 70 or 80 cc. can be obtained with ease. The process is facilitated by cooling the condensed air on its way to the coil, as by passing the tube through solid carbonic acid. With this refinement liquid air appears in three or four minutes, and collects with great rapidity. The new apparatus does not appreciably reduce the heavy expense incident to experiments at low temperatures.—*Brit. Jour. Dent. Sc.*

Letters.

A PLEA FOR CO-OPERATION FOR PROTECTION.

NEW YORK, Feb. 12, 1896.

My dear Dr. Crouse:--As to "deferring" brethren, those who have shown no disposition to listen to your persuasive advice, I feel an utter hopelessness. They are past all understanding. I have in no case infringed any body's patent, and do not intend to, but I like to feel that there is a "protective" arm somewhere to stop any *nonsense*, should it be attempted. I doubt the propriety of *begging* dentists any longer to act the *manly* part and come within the protective fold, yet I would have every member of this profession within its embrace, so that we could show a united front. What a power that would be.

Very truly yours,

J. W. CLOWES.

ALLOY AND CEMENT FOR FILLING.

Manatee, Fla., Feb. 9, 1896.

To the Editor of the Dental Digest,

DEAR DOCTOR:—In the January DIGEST is an article by C. W. Strang, entitled "Failures and Causes," wherein he advises a mixture of cement and amalgam for filling teeth, but cautions his readers that "it cannot be successful in the presence of moisture," by which I understand him to mean immediate exposure to the saliva after completing the filling. I use a method that is a great success in such immediate exposure to the buccal fluids; is much easier to perform; gives a much better color to surface of filling and to thin overhanging enamel; will wear better, and is as unshrinkable as the mixture Dr. Strang uses.

It is as follows: Procure good alloy and cement; mix the alloy as dry as will work well; press into a flat button, the thickness of a silver dime, for an ordinary cavity. Mix the cement so as to bring it to its stickiest condition; then, the cavity having been dried and kept so, fill with the cement, and quickly, before it begins to set, press onto it a plate of amalgam about the size of face of exposed cement. Press this plate into the cavity, allow-

ing cement to escape slightly at all parts so far as practicable. With the ball end of very small burnishers perfect the union of amalgam to the edges of the cavity and then contour by the addition of necessary amalgam. Experience with this plan for over eleven years gives me such faith in it that I have not filled a single cavity with amalgam without the cement for five years past, and I believe the time will come when the use of amalgam without some such lining of the cavity will be considered malpractice.

This use of cement saves much discomfort to the patient from making undercuts or retaining points, also from thermal changes, and other advantages enumerated above.

Yours truly,
W. E. DRISCOLL.

DR. DWINELLE'S DEATH.

NEW YORK, Feb. 14, 1896.

To the Editor of the Digest,

MR. EDITOR:—Dr. Wm. H. Dwinelle died at his native place, Cazenovia, N. Y., yesterday, Feb. 13th, at the age of seventy-five years.

Dr. Dwinelle has been a remarkable person from a dental standpoint, and would undoubtedly have been so in any calling he might have chosen, for he was unusually endowed. He has stamped himself upon his calling in a very decided manner. We do not recall any such practitioner, as we have observed him from the truly practical dealing. He closes up the influence on the lines he has worked, and he has left no one of his teachings that bears any portaiture of him in his works. There are a few of his marked examples of ability in handiwork that would cause most practitioners to observe with marvel. We refer to his operations in filling; just such we have never seen from any hands; they look like molten gold and have a glow of finished surface that is equal to "Tiffany jewelry." This work that we have seen was done before the days of modern mechanical devices.

Dr. Dwinelle has had a clientage as remarkable as his works. It would cause wonderment to the coming generation to see the list of patients in his address-book and the amounts set against their names for service rendered. Nothing like it today. He

has truly been king among the dental practitioners of the world. We believe that no one, unless it is possible that Dr. Thomas Evans of Paris may have been his equal in this regard, for Dr. Evans' patients have been the kings and queens of Europe. Nevertheless, between \$30,000 and \$40,000 yearly by hard labor is not a small emolument to bank, and the Doctor was a hard-working practitioner in those palmy days from 1850-75. This view of his practice has its lesson, although it is far from being the acme of purpose.

All through his earlier days he emphasized his calling with his pen and did much to stimulate men to better efforts in practice. His writings will be found back in the Forties, and among them will be seen many things that are considered new in these days. Not infrequently would he be seen coming into society meetings with back copies of dental literature (this in latter years) and a smile would creep over the knowing ones' faces, for it was sure that he had a claim of originality to settle, and he seldom failed to do it.

For the last half-dozen years Dr. Dwinelle was not in a proper state of mind and body for practice, but necessity urged him forward until difficulties settled down upon him, and nearly four years ago he retired to his native place. Little by little his mind ebbed away, so that life became an unconscious existence, which was certainly a mercy to him during the last few months of his life.

We have no such stamp of men left. How rapidly our ranks have been deprived of late of the men whom we have known and to whom we have looked up.

Yours truly,

G. ALDEN MILLS.

NEW YORK LETTER.

NEW YORK, Feb. 20, 1896.

To the Editor of the Digest,

MR. EDITOR:—"Pyorrhea" is flowing actively between Chicago, New York and Philadelphia. Dr. Talbot has tapped the run this time, in addition to Dr. Curtis, and with Dr. Rhein before the Odontological in March, may we not hope to get somewhere.

Dr. Dawburn, of the New York Polyclinic Hospital, gave to the New York Institute of Stomatology, on Tuesday, Feb. 4th, a

series of surgical clinics, together with a lecture which was a success in point of attraction from the general surgical standpoint, but hardly from the modern view, as dentists look at oral surgery from a conservative standpoint. Atkinson and Garretson have checked the inroads of general surgery from producing ugly disfigurements of the face by scars. Not so was this exhibition of Dr. Dawburn's, for he was intent on the line of operation.

One thing we must mention, because we, as dentists, have been held up to criticism by the New York *Medical Record* as careless in antiseptic care. The dental practitioners present who witnessed these clinics criticised the lack of antiseptic care shown, especially in one case which had been successfully operated upon for nasal sarcoma, the patient very much degenerated, and another exhibiting a degenerated case of the mouth, intimated to be of doubtful character. Leaving out the possibility of any chance of infection, we do not think that dentists would have neglected antiseptic measures, and we believe that dentists are, as a rule, fully as careful as physicians.

We have it direct that a new dental school is on the tapis in Philadelphia.

Dr. Williams' paper, in the February *Cosmos*, will attract more than ordinary interest, both because of the writer's ability, and because his views are opposed to Prof. Heitzman's. All lovers of investigation can view these additional articles only with pleasure, for they will invite discussion, and in this way the truth can be brought out.

We often hear regret expressed that Dr. Williams could not have remained in America. His citizenship is in London, but American journals publish his writings.

Dr. Talbot has paid a visit to New York. We hear his paper read at Philadelphia very favorably commented on. It looks as though "Uric Acid" was not going to do all the talking.

The Odontological Society commenced having clinics, preceding the evening meeting of each month, last Tuesday. They will doubtless prove an attractive feature.

Dr. St. George Elliott gave a paper before the First District Society on "Absorbents." He is fertile in useful things.

New York societies are fully warmed up now for winter work, but New York weather is the coldest in twenty-five years—8 degrees below zero. Cordially,
NEW YORK

The Dental Digest.

PUBLISHED THE

TWENTIETH DAY OF EVERY MONTH.

Editorial.

THE RECENT LITIGATION ON THE LOW BRIDGE PATENT.

At the time of going to press it is impossible to give our readers any detailed information as to the result of this suit, which was argued last month. In the January DIGEST we gave the three points at issue which made up the defence in this suit, and we repeat them here: 1st, defect in the title and assignment; 2nd, that Low's first application was for an entirely different device from the one on which suit is now pending; 3rd, that Low was not the inventor, but that what he claimed as new and useful was neither new nor useful. We also stated that the complainants were confident they would win in this suit.

By way of encouragement we can state that we have come out ahead in the preliminary skirmish. We expect to be able to give the full details in our next issue. In the meantime the members of the Protective Ass'n should make every possible effort to get those not in the Association to join at once.

DENTAL EXAMINING BOARDS AND PRELIMINARY EDUCATION.

In this issue of the DIGEST we publish a paper by G. Carleton Brown which should have appeared last month, but a press of other material compelled us to delay it. Since then, however, it has appeared in the *International* for February, and in the same number is an editorial in reply.

The article in question is of such a nature, and makes such charges and criticisms on dental colleges and on some of the college graduates who come before the State boards, one of which

the writer is a member of, that we feel it deserves more than a passing notice. We cannot adopt the views of the editor of the *International*, either as to the objection made to State laws governing the qualifications of those entering the profession, nor can we see the impropriety of publishing the answers made by some of the applicants.

It is perhaps true that the governors of states are not as well informed as to who are the best qualified to fill the positions of examiners as they might be, but this difficulty is overcome, in a measure at least, by the advice given by members of the profession. Furthermore, in some instances the state societies have recommended a number of men to the governors and given them a list from which to choose.

To argue against laws requiring certain qualifications on the part of those who wish to practice in a profession which has to do with health, and even human life, shows a lack of wisdom and observation. The more especially as these laws have been in practical operation in many states and have been of infinite benefit and great protection to the citizens of such states. Besides being a safeguard to the community, the effort to obtain better education and preparation for so responsible an occupation as the practice of dentistry should be a source of gratification to the dental colleges. For surely these State laws have been the means, more than anything else, of increasing the number of students in colleges, so much so that many of them are now overcrowded with pupils studying in order to meet the requirements imposed by the laws. If there were no such laws, it is safe to presume that many of those now in the colleges would not be taking the course laid out by reputable dental schools, but would have started to practice without that preparation which is so necessary, and to which we are sure the colleges are the best aids now in existence.

If the answers of applicants, which are given as from college graduates, represent but a minority, such a condition is disgraceful simply in proportion to the number of such graduates, and the "war on the colleges" should be in the same degree. We would suggest that the different State boards bring their examination papers to the meeting of the National Board of Examiners each year, thus furnishing one aid in ascertaining what qualifica-

tions are required by the various colleges, and adopt rules accordingly. Surely the boards of examiners can bring about any needed reforms, and we look for great good resulting from their future work.

There are other abuses spoken of in Dr. Brown's article which, if true only in part, should not pass unnoticed; however, lack of space and time prevents us from discussing them now, but we shall discuss this important subject further in future issues.

REMARKABLE MISQUOTATION.

We are led to write this editorial by the statements which the editor of the *International* ascribes to us, and which we did not make.

In an editorial concerning Dr. Brown's paper, in the February No. of that journal, the following appears: "The following advice, quoted from Dr. Crouse, would be excellent if it were at all new, but as it is not we repeat it here simply to answer an unjust criticism. 'Now as to the student's mechanical adaptability, * * * if he hasn't it in his fingers * * * he will never make a dentist, and of this fact the colleges have, as yet, taken no notice * * * Therefore, the first six weeks of the college course should be spent in finding out who are properly qualified by nature, as well as by training, to be dentists.' The ignorance of college work displayed in this quotation is most remarkable."

If our readers will turn to Dr. Brown's article in this No. of the *DIGEST* they will see that we made only the last statement of the foregoing quotation, beginning with 'Therefore'. Part of the first sentence of the same quotation is Dr. Brown's own language, while the phrase, 'if he hadn't it in his fingers,' Dr. Brown ascribes to Dr. Eaton.

A little further on in the same editorial the editor says, "We cannot follow this unfair and untruthful denunciation of college work." Considering that Dr. Brown's article is published in the *International*, and that all the quotations in question are contained in thirty-six consecutive lines, it would seem that the editor of that journal not only could not follow, but that he also could not or did not read the "denunciation."

The 'ignorance' of which he accuses us we should say was his

own, in that he does not know how to make a quotation, and very evidently does not understand what a Dean's duty is as regards the young men who desire to enter the profession. He says, "It is hardly to be questioned but that every effort has been made for years, during the first session or Freshman year, to examine critically into the inclination and ability of each separate student. It is a difficult and not always a pleasant task, but yet a duty which each Dean must perform. In this effort to weed out the incapables, we have no doubt but that each Dean has discovered a decided opposition from the individual as well as parents and guardians. It is rarely that good advice of this character will be received in the spirit in which it is given. To expel a man because his abilities are supposed not to be of the highest order has not yet become a law of colleges, and we hope it may never be so long as the possibilities of development are without limitations."

Now we may be mistaken, but we should judge from this statement that the writer thinks it better to allow a man to continue his college course, even if he is not over well adapted to be a dentist, than to advise and even, if necessary, compel him to give up his studies and try something for which he is more fitted. We should say that the real kindness, and the Dean's duty, as well, when the student is unfitted by nature and does not possess the peculiar requisites to make a good dentist, is to show him his mistake before he has spent much money and three years' time, instead of trusting to the 'possibilities of development' and allowing him to find out his mistake by sad experience, arising from failure. It is safe to say that at least one-third of those who take the three years' course and get their diplomas should never have been allowed to take up the study. Who is responsible for the wrong to the community, to the profession, and to the unfortunate individual who has wasted his money and time, and who either makes a miserable failure of dentistry, or else, after a futile effort to make a success of his chosen profession, drifts into something else?

NOTICE CONCERNING THE INDEX.

An index of the DENTAL DIGEST for 1895 is sent out with every journal this month. Owing to the illness of the editor, and to a press of other work, it was omitted from the December issue.

Notices.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

This Board will meet Saturday, March 21, 1896, at the Sherman House, Chicago, for the examination of candidates for license, and for the transaction of other business. All persons wishing to be examined must send their names to the secretary at least one week prior to meeting. L. L. DAVIS, Sec'y.,
1207 Columbus Mem. Bldg., Chicago.

INTERSTATE DENTAL MEETING.

The State Associations of Nebraska, Iowa, Kansas and Missouri have arranged to hold a large joint meeting at Excelsior Springs, Mo., June 23-26, 1896. Most of these states have abandoned their regular annual meeting, and preparations are now about completed which assure every dentist who attends a rare treat. The program embraces five papers and six clinics from each state, besides a number to be furnished by distinguished men from other states. No dentist in these states can afford to miss this meeting.

S. C. A. RUBEY, Sec'y.,
Clinton, Mo.

TOPICS FOR DISCUSSION BY STATE AND LOCAL ORGANIZATIONS.

1. Should not the appointment of Dental Examining Boards be under the control of the State dental societies?
2. Should not the granting of certificates of qualification by examining boards to non-graduates be generally abolished?
3. To what extent is the washing of amalgam masses an important feature in the production of a gold filling?
4. What results are to be expected in replantation or transplantation as a means of treatment of chronic phagedenic pericementitis?
5. The committee earnestly recommend that the report of the Committee on Dental Nomenclature of the American Dental Association be fully studied and discussed.

LOUIS JACK,
J. N. CROUSE,
EDWARD C. KIRK,
Committee on State and Local Organization.

News Summary.

TREATMENT OF SOFT CORNS.—Doctor Miall, in the *British Medical Journal*, declares that an ounce of perfectly freshly made tannin dissolved in six

drachms of water with the aid of gentle heat, if applied once or twice a day between the toes after washing, gives immediate relief to soft corns. Tannin in powder is not so effectual.

TO REMOVE TATTOO MARKS.—Make a mass, the consistency of dough, with salicylic acid and glycerin; apply to the tattoo marks, and confine with a compress and strips of adhesive plaster for one week. Then remove the layer of epidermis over the marks, and apply salicylic acid and glycerin as before. It may be necessary to repeat three times, but usually the second application removes the marks.—*Medical Brief*.

MUMPS.—The incubation period varies from eighteen to twenty-two days, and the malady is especially contagious during this period, but is also contagious after convalescence, the exact length of time, however, not having yet been determined. Frequently the disease begins with tumefaction of the sub-maxillary glands and a severe angina. Metastatic orchitis sometimes begins with an epididymitis.—*Le Courrier Medical*.

AN INTERESTING EXPERIMENT.—Doctor Schleich, of Berlin, recently gave an interesting demonstration at the Sydney (New South Wales) Hospital. He induced local anæsthesia by the injection of a saline solution into the tissues surrounding the part to be operated upon. The theory is that the pressure of the fluid paralyzes the nerve extremities, and therefore removed all chance of pain. The demonstration was altogether satisfactory, both to the patients operated upon and to the attending surgeons.—*Australian Journal of Pharmacy*.

CHLOROFORM ASPHYXIA.—Konig-Maas's method of restoring persons apparently dead from chloroform, as practiced at the Göttingen clinic:—The operator, standing on the left of the patient and facing him, places the ball of the thumb of the opened right hand upon the patient's chest, between the place of the apex beat and the sternum. He then repeatedly presses in the thoracic wall with a quick, strong movement, at the rate of about one hundred times per minute. The results by this method have been very satisfactory.—*Brit. Jour. Dent. Sc.*

ALVEOLAR DENTAL HEMORRHAGES.—Dr. Otto Arnold, in Oct. *Cosmos*, says: My universal method of procedure in the management of hemorrhage following tooth-extraction, is to have the patient rinse the mouth freely with hot water. This encourages free and uninterrupted bleeding from the wound and stimulates a normal reaction in the tissues, soon followed by a natural cessation of the hemorrhage. If any considerable amount of laceration has taken place, I attempt to replace the tissue by compressing with the fingers or stitching into apposition any pendant portion of the gum, prescribing as a dressing, to be applied frequently to the wound: Tannic acid, gr. 20; LISTERINE, oz. 4; Aqua dist., oz. 4.

The Dental Digest.

Vol. II.

CHICAGO, MARCH, 1896.

No. 3.

Original Contributions.

IS IT A BLOT ON THE PROFESSION?

BY WILLIAM H. TRUEMAN, D.D. S., PHILADELPHIA, PA.

There is, in the leading paper of the December number of the DIGEST, one point that to my mind especially invites criticism. It is this; and it is a fault common, far too common in our profession; the gross, if not inexcusable carelessness in the use of assumed facts upon which to base disparaging remarks regarding a professional brother. The writer makes a grave accusation upon either the intelligence or the integrity of men of good repute and of recognized skill, based upon the bare statements of patients who were formerly under their care. What evidence had he that those statements were true? What evidence that they were not, unintentionally perhaps, misleading? So far as the article shows, he made no efforts and exercised no care to verify the statements made, but at once pronounced judgement that the three operators, whose acknowledged professional attainments—if a well earned professional reputation is worth anything—fully entitled them to an hearing, were guilty of either ignorance or indifference regarding a most important operation.

What are the bald statements of patients, especially concerning a dentist who they have discarded, worth? Would the doctor accept as readily the statement from one of his patients, especially if coming from another dentist, that the beautiful gold filling he inserted a few days ago came out the next day? There is the vacant cavity to which the patient triumphantly points, and insists that it is in the tooth upon which he operated. Would he not want to take a careful look at that tooth? In case of doubt would he not want to examine his diagram account book before accepting his patient's dicta? Why do dentists so generally use diagram

account books? Is it not one of their implied functions to meet and furnish evidence to refute the so often made mis-statements of patients? In the statements upon which the article is based we readily recognize the mere talk of everyday office experience, that for the most part should go in at one ear and immediately out of the other.

Am I alone in having patients of unimpeachable veracity who solemnly declare that they faithfully use tooth-powder and brush, as directed, three times a day, and yet present themselves with teeth showing deplorable and continued neglect? Are my patients the only ones who break teeth from plates while eating something very soft? Do other dentists have patients bring to them strong metallic plates badly bent out of shape by, if their statements are true, ordinary use in the mouth? I have a few of that kind, and any dentist who will take the trouble to do that which so many dentists shamefully neglect—make himself familiar with the literature of his profession,—will soon discover that such patients have always existed and have pestered many a professional brother.

There are careless dentists, too many of them, there is no question about that; careless in more things than not properly cleaning their patients' teeth; but I am not willing to admit, indeed I indignantly repel the insinuation that this special carelessness exists to a degree entitling it "a blot on the profession." If the Doctor would investigate a few of the cases like the three he cites, he might, perhaps, be less ready to accept as evidence against others that which he would energetically repel if directed to himself. I have followed up quite a number of such cases with the result of feeling proud to be in a profession embracing within its membership so large a majority of honest, careful, well qualified men. So utterly worthless and so often so, in my experience, has such evidence as that upon which the Doctor predicates his case proven upon investigation, that I read with impatience reflections upon individuals, and from them to the profession at large, its text-books and schools, based upon such flimsy and unreliable testimony. Let the Golden Rule have fair play.

Please name the text-books, giving author and date, that teach it is not a serious matter to neglect the removal of tartar deposits and the proper cleansing of the teeth. I have a few hundred

treating on that subject, and from Bourdet to Craven, so far as I now recall, they all especially emphasize the importance of thorough and constant cleanliness. Please remember, however, that the theories upon which the later methods of procedure are based are as yet in their infancy, indeed very young. The statement so often made, that more teeth are lost from neglect to remove tartar deposits etc., than are destroyed by caries, is open to question. Time sufficient has not yet elapsed to prove that modern methods have fully mastered those conditions so prolific of tooth-loss, which the older writers so well named, "Devastation of the Teeth."

METHOD OF MAKING COMBINATION BRIDGE-WORK.

BY F. J. FESLER, D.D. S., LOWELL, MASS.

During the last few months persons have been visiting the dental offices throughout the country and selling ideas respecting a combination bridge, consisting of a small rubber plate, to which gold clasps are attached.

I will explain the method of making the fixture and save you the sum charged by the agent, \$25.00, so that you will feel that you have the method and *DIGEST* for one year's subscription, \$2.00, making a saving of \$23.00 from one article.

The method is mostly applicable for spaces where superior or inferior cuspids or molars have been extracted. Particularly is this true if the wisdom tooth or twelfth year molar be in place, the molar and bicuspid anterior to it having been removed. Or in cases where the second bicuspid remains standing alone, and the wisdom tooth on the same side is still in place, the other molars and bicuspid having been removed, as well as many other cases which will readily suggest themselves to the mind of the ingenious operator.

For example, we will select a case that often presents itself, one where the twelfth and sixth year molars and second bicuspid have been removed from the lower jaw. First take an impression in modeling compound, wax, or other material, and make a model in plaster, then take the measure of the molar and bicuspid around which you are to form a clasp, first making a pattern from common tea-lead by which to cut the clasp metal.

This should be made from the following formula:—Take a five dollar gold piece and a ten cent silver piece, or what is better, a ten dollar gold piece and two ten cent silver pieces, melt them together and roll into plate, No. 14 thick, U. S. standard gauge. This can best be done by sending the same to a gold refiner, as the expense is small and better results are obtained than can possibly be the case with the ordinary conveniences found in most dental offices.

From clasp metal obtained in this way cut your clasp by the tea-lead pattern, made either from the plaster model or by direct approximation in the mouth, to go two-thirds of the entire distance around the teeth to be fitted. Fit this clasp as accurately as possible, and in most cases it will slip onto the tooth tightly enough, then remove it and solder a lug, or perforated piece of plate, to extend over into the rubber to which the teeth will be attached.

To prevent its being in the way of the teeth you should be careful to see where it is best to solder the lug, or, as some prefer, two holes may be drilled through the clasp and a piece of gold wire, about No. 20, made in the form of a staple, can be soldered into the clasp, making a strong attachment around which to pack the rubber.

After this is done, the clasps being made and fitted to the molar and bicuspid, take them off, warm them and place some common wax or paraffine on the inside, and while warm replace them on the teeth. This helps to hold them in place and keeps the impression material from going between them and the teeth.

Now take an impression in plaster of paris of that side of the mouth, and when the impression is withdrawn the clasps will come out with it, or if not can readily be readjusted into it. Then make a model from this impression, and when done form a plate of wax the size and shape of the one you wish in rubber. (It is well to carve out space for teeth to be afterwards attached.) Flask in the same way as in making rubber plate, scald out wax, pack rubber in its place and vulcanize. When done, finish it up and try in the mouth to see if the work is perfect in adaptation, and if so, select your teeth, (I find the hollow back teeth to be more easily adjusted), fit them into place and try the bite. When correct proceed in the same manner as though you were repairing

a common rubber plate when attaching a tooth or two. When completed it makes a very neat, cheap bridge, if too much lateral pressure is not brought to bear on it, in which case it will spring the clasps to the side opposite the pressure and allow the plate to gall the soft tissues.

WHAT IS THE MOST SATISFACTORY ANTISEPTIC, AND BEST METHOD OF ROOT-CANAL STERILIZATION?

BY DR. C. C. BARKER, MERIDEN, CONN., READ BEFORE THE CONNECTICUT STATE DENTAL ASSOCIATION, MAY, 1895.

This is the third one of the four questions propounded by the American Dental Association to the state and local societies throughout our country. These questions come to us from their regularly appointed committee—Louis Jack, J. N. Crouse, and Edward C. Kirk, Chairman, with the request that we discuss them and present a report before the next annual meeting of the A. D. A.

The advantage and benefit to be derived from such a general discussion of the topics indicated must be apparent to all. If a consensus of opinion can be obtained, it can be gained only by some such method as this. I feel that our thanks are due the National Association and their Committee for initiating the scheme.

The question which is now before us presses for answer, not only now, but often in the routine of daily practice. The dental pulp is a very unneighborly, unsocial part of our anatomy. He often gives infinite trouble while alive, and seldom forgets to kick after he is dead. As long as he lives and behaves well we will not taunt him with uncanny names, but when he is dead, he becomes a thing of evil—“*d’evil*”—a veritable devil.

Every dentist in Connecticut, at least, would like to know an absolute, a sure and certain means or method by which to put a quietus upon his Satanic majesty and undo his deviltry.

I do not quite like the form of the question, or questions, as I may call it, for, if you will notice, it is a sort of double question—“What is the most satisfactory antiseptic, and best method of root-canal sterilization?” Inasmuch as “the best method of root-canal sterilization” involves antiseptic treatment, the first question, “What is the most satisfactory antiseptic,” is really superfluous

and out of place; it cannot be properly considered—for obvious reasons—except as we give attention to methods of treatment.

Why is this particular question pressed at this particular time? Because there is a general disposition for some short cut, quick, rapid transit method, when called upon to deal with teeth having dead or dying pulps. In evidence, note the proposal to leave the devitalized tissue undisturbed, treating it somehow, some way, antiseptically, as advocated by Herbst and others. Even Dr. Miller joins the endeavor to carry out the plan. We stand with half a century of study of the pulp, its nature, its functions, pathological conditions, etc., to our credit and advantage, and it is time we began to know something definite, and I think we do.

Whence the necessity for sterilization? We all know that apical pericementitis, alveolar abscess, and their accompanying disorders, have as their invariable and immediate cause the septic root-canal condition produced by a disorganized, putrefying pulp. We also know the accepted and often quoted axiom, that effects disappear when causes are removed. (This is not absolutely true to the end of the chapter, but is correct within a certain limit.) With these two points, then, fixed and assured in our minds, concerning which there can be no difference of opinion:—1. That the putrefying pulp is the prime cause of the troubles referred to, and their incident woes, and 2. That if the cause can be obliterated a cure is likely to be the sequel—common sense points infallibly to the initial step which should at once be taken in a right “method for root-canal sterilization.” The first step is to as carefully and as thoroughly as possible eliminate from the tooth structure the disorganized and putrefying pulp. This means a cleaning of the premises.

How can it be done most effectually? Before answering this directly let me say that teeth come to us for treatment in a great variety of conditions, and are brought by many varying people—men, women and children, in all grades and states of vital power and constitution, normal and abnormal. Another thing to be thought of about these people who come to us is, that in them all the vital power, the power of life within them, is struggling more or less successfully against the invasion of the tissues being made or attempted by way of the root-canal. What we should do is to assist this effort of nature to cast the devil out.

How can we do it? By roughly and rudely plunging probe and broach into the foul mass, filling the canals and mingling with its infectious poison some questionable medicament we call anti-septic? I say no! Clean the premises; wash out the foulness; float it off; carry it away with a flood. This I believe is the proper thing to do—the first thing—not simply first in point of process, but the chief thing, the most important step; for if this is not well taken, subsequent steps are liable to end in failure.

Unless the tooth which claims our attention is very sore—so much so that handling will aggravate its condition, the sooner we go about the cleaning the better. In the case of this sore tooth a quick relief, followed by a speedy improvement of condition, can usually be afforded by making gentle entrance into the pulp-canal, just sufficient to give escape to the pent-up gases. A day or so later, when soreness has abated, we may proceed to cleanse the canal or canals, as the case may be.

We are often told that entrance to a canal ought never to be made without the rubber dam *in situ*. When we are to open a hitherto unexposed canal, where the pulp has lost its life by strangulation, a blow, wedging, or something of the sort, the dam should be used without doubt; but when the pulp has died from exposure, and the secretions of the mouth have had free access, I cannot conceive the necessity of applying the dam at once. I prefer usually in such cases to first cut away the decayed dentine from the crown cavity, opening up a clear path to the canal entrance, and then, without the dam, I can use water more freely in syringing out. This washing almost invariably accomplishes a good deal; a large proportion of the canal foulness is generally evacuated by it, making further cleansing easier. Now apply the dam, and with a proper breach and cleaner remove remnants of pulp tissue, taking care that nothing is forced through the apical foramen, then saturate the canals and dental tubuli with a 50 per cent. solution of peroxid of sodium, washing and rewashing with this liquid, by means of a broach wrapped with absorbent cotton, until the apartments are cleansed.

Sometimes, when the tubules of the dentine are in a very foul and discolored state, I send the patient away with packings of cotton or asbestos fibre moistened with sodium peroxid, for a day or more—never with any unsatisfactory results—then at

another sitting complete the washing, and if access to any canal is not as complete as wished for, I supplement the sodium treatment with an application of a 50 per cent. solution of sulphuric acid, which not only neutralizes the free alkali of the sodium, but will creep along the fine, hair-like, tortuous canals, cremating and rendering innocuous the broken down tissues, giving, after a 24 or 48 hours application, entrance into these otherwise inaccessible canals.

With these two agents I believe we have at our command the best means hitherto employed for pulp-canal and tooth tissue cleansing. By them we can render a tooth aseptic—free from septic matter—if with anything. Often the tooth may be cleansed and canals filled at one sitting, if conditions are favorable; if not, put a dressing of cotton saturated with alcohol in the canals, close the entrance securely with gutta-percha, and put it on probation. This will give nature time to adjust matters in the region beyond the foramen, and she will apply her kindly energies to this purpose. Remember, she makes the cure, not we. All we can do is to chase away the intruder—remove the cause—and she does the rest, so far as the soft tissues are concerned. How patient she is, yet how often abused. How tolerant she is of poor dentistry. We are indebted to nature more than we know. She struggles for recuperation continually until exhausted. Let us trust her more and see that she has free and unfettered opportunity for her work. This should be our function and this should indicate what use we make of the materia medica.

There has been, and probably is now, much ill advised over-medication of the teeth. It was this fact without doubt which prompted Dr. Junius E. Cravens, of Indianapolis, to present at Washington, in 1887, his paper on the "Management of Pulpless Teeth," in which he advocated simply a mechanical cleansing of pulp-canals without *any medication whatever*, and then filling, taking care that the apex of the root is perfectly closed. He advised us to "throw physic to the dogs." How fiercely he was taken to task by a number of men whom I might mention. From the spirit in which they did it I felt like taking his part, although I considered his paper very incomplete and largely incorrect. Still, it had this merit of insisting upon a cleansing, and meanwhile keeping medicaments away from the canal.

So eminent an authority as Dr. Miller, who knows all about the heathen microbes and can bring the antiseptic batteries to bear, says the chief point in pulp-canal treatment is a thorough mechanical cleansing. How can this cleansing be achieved more readily and perfectly than by the method and the agents I have mentioned? When this has been done, and nature smiles at the operation, if perchance there be fear that somewhere in some capillary extremity or recess the devil still lurks, send some chlorid of zinc in after him. The chlorid will certainly permeate to his hiding-place and paralyze his every energy.

It is largely for this reason that I favor oxychlorid as a root-filling. I do not wish, either, to employ antiseptics which stain the tooth substance.

There is no occasion for so much fright concerning the bacteria. Micro-organisms can not "live and thrive and grow" except upon suitable soil—a habitat. This, within the tooth, is the dead pulp. When that is fully removed their occupation—like Othello's—is gone too. Pericementitis and alveolar abscess are caused, as I understand, not directly by the microbes, but rather by the poisonous ptomaine resulting from the putrefaction of the pulp, which, passing through the apical foramen, excites inflammatory action. With this thorough cleansing and purifying the ptomaine supply is cut off, distillation ceases, and with the apartments renovated, everything sweet and clean, what is needed is not a shotgun prescription to kill something, but a mild and peaceable tenant who shall thoroughly occupy the premises and keep the mischief-makers out.

I do not favor the idea held so largely in many quarters that every tooth should be saved and that every root may wear a crown. The sentiment is quite absurd. It is neither according to law nor gospel. The best antiseptic for a large class of derelicts, whose condition I will not stop now to describe, is not carbolic acid, or even mercuric chlorid, but a well adapted pair of forceps skillfully applied.

GRATIFYING TO SMOKERS.—Professor Hajak, of Vienna, says smokers are less liable to diphtheria and other throat diseases than non-smokers in the ratio of one to twenty-eight. Dr. Schiff tells us that smoking is forbidden in bacteriological laboratories because it hinders the development of the bacteria.—*Medical Record*.

Digests.

The Therapeutic Gazette for January, 1896.

"THE CONTROL OF HEMORRHAGE IN 'BLEEDERS.'" It is hard to imagine a more shocking discovery for the surgeon than the fact that he has operated upon a "bleeder." The ordinary methods of controlling hemorrhage are of so little avail in these cases as to be practically capable of producing more harm than good, and a minor surgical operation, from which the patient expected to recover in a few hours, may for this reason cost him his life.

There are two methods which should be tried, as they rest upon a rational basis and have some practical experience to endorse them. One of these is, covering the involved surface with lint which has been wrung out of a strong solution of alum, or where the bleeding is from an extremity, to immerse the part in a saturated solution of this drug.

The second and perhaps more promising method is the internal use of calcium chloride for its influence upon coagulation of the blood. Wright, of England, has proved that it increases the coagulability of the blood, not only in animals, but also in man, and has reported several cases of hereditary hemophilics where good results followed its use.

"ON THE INFLUENCE OF ETHER UPON THE KIDNEYS." Feuter, of Berne, has reported conclusions based on one hundred and fifty clinical cases and thirteen experimental observations in animals on ether narcosis. These were: 1. That ether has no perceptible effect upon the healthy kidneys of animals, who, moreover, are more susceptible than mankind to its influences. 2. That it is not dangerous in persons whose kidneys are slightly diseased. 3. That subsequent disturbances in the circulation of the kidneys, when met with, are very transitory and quickly disappear.

Wunderlich, in a very admirable *resume* of the subject, con-

cludes that in an already existing case albuminuria is frequently augmented by ether narcosis; that this is twice as common in chloroform narcosis—in the proportion of 11.5 to 6.9 per cent. From chloroform, and much less often from ether, casts are to be found—in the proportion of 34.8 to 24.6 per cent. If cylindruria previously exists, from both ether and chloroform narcosis there is an increase to be met with, due, he believes, to an ischemia of the kidney or to a lessened blood-pressure. Casts, he thinks, are due to a direct irritation of the kidney epithelium from the action of the ether or chloroform. He adds, finally, that ether nephritis may be excluded from surgery.

In respect to the renal irritation, Wood asserts that in fifteen animals whose urine was carefully and by various processes tested as to the presence of ether, none was recognized. Yet he admits that etherization in dogs produced cloudy swelling of the epithelium—which, however, he supposes to be due to the general intense congestion by some of the retrograde ether products and not to the ether itself. His conclusions are, that if the kidneys be healthy, the action of ether on them does not amount to much; but if they are diseased, the tendency exists to increased irritative processes.

Burns has lately concluded that some of the bad effects of ether on the lungs and kidneys are due to the oxidation and formation of aldehyde and other products of decomposition, caused by the exposure of ether to the light and to the possible mixture of air in the ether-bottles; both of which contingencies should be guarded against.

Angelesco has shown, what had previously been taught us by Swain in connection with chloroform, that in ether narcosis the temperature falls from seven-tenths of a degree to a full degree, with the difference that under ether there is a vaso-dilatation of the surface, and under chloroform a vaso-contraction.

As perhaps throwing light upon some of the peculiarities and admitted mishaps that occur in etherization, the fact elucidated by Fayer and by Wright might be mentioned—that coagulation of the blood in the smaller vessels and capillaries is very apt to come on with imperfect oxidation. This pertains strongly to the asphyxia or partial asphyxia that we occasionally meet with in etherization.

"NEW VIEW OF THE TREATMENT OF VOMITING AFTER CHLOROFORM ANESTHESIA." In the *Revue de Chirurgie* for September, M. Lewin relates his experience with the use of vinegar to prevent vomiting in one hundred and seventy-four cases of chloroform anesthesia. In one hundred and twenty-five cases he obtained complete success, no vomiting of any kind having been produced. In forty-nine cases there was vomiting, but it was generally slight and the rejected material was rather viscous. The method should be very carefully carried out, in order to insure good results. It is known that chloroform is eliminated almost exclusively through the lungs, partly as free chloroform and partly as formic acid and chlorine; the chlorine exercises an irritating action on the larynx and trachea, and this is one of the principal causes of the vomiting. When a cloth saturated with vinegar is held over the nostrils the chlorine combines with the acetic acid as fast as it is evolved and forms trichloroacetic acid.

It is very dangerous to use pure chloroform, and all medicinal chloroform should contain a certain amount of alcohol, which renders its decomposition during narcosis more difficult. The dehydrating action of the anesthetic influences the endothelium of the blood-vessels and causes coagulation of the blood, to which the slackening of the circulatory movement and the feeble activity of the chemico-biological phenomena in the capillaries also contribute. Hence the wisdom of having the patient breathe air heavily laden with moisture, after the action of the chloroform is suspended. Under such circumstances acetic acid is recommended by the author as a powerful factor in restoring to the blood its normal fluidity, owing to a property that it derives from the water it contains, and to its energetic power of destroying the fibrin. Moreover, acids in general are stimulants of the respiratory tract. The foregoing considerations seem sufficient to explain the phenomena, without bringing forward a hypothetical action of the vinegar, or of acids in general, on the vomiting centre, by the intervention of the vaso-motor nerves.

The following observations were made in cases where this treatment was employed. Immediately after the application of the vinegar the pulse became strong, respiration grew deeper, the face regained a little color, and the corneal conjunctiva became bright. The appetite returned at the end of a short time, and the

patients occasionally complained of hunger on the very day of the operation; frequently they did not suffer at all from the general uneasiness which nearly always follows chloroform anesthesia. It does not follow from this, says M. Lewin, that the application of the vinegar always suppresses the vomiting, for, in certain cases where the patients are very nervous, or are suffering from affections of the lungs or of the stomach, vomiting may occur in spite of the treatment.

The method of application is as follows: A piece of linen of about the size of a napkin is saturated with vinegar and lightly wrung out; it is then placed on the patient's face, over the mask, which is afterward carefully withdrawn—care being taken not to allow the air to gain access to the face too suddenly, for it ought to pass through the linen cloth before being inhaled. This cloth must be kept on as long as possible—three hours at least, and better still during the entire day, for occasionally the presence of chloroform in the expired air has been observed for more than two days after the narcosis. If the cloth is removed too soon, nausea will set in; if it dries very rapidly, it must then be replaced immediately with a fresh one, which is put over the first cloth before the latter is drawn away, in order to prevent the air from touching the face. If the wet cloth is annoying to the patient, it may be held away from the face with a mask. It is of the greatest importance to conform to these rules, for failure to observe them has prevented good results from following the application of the vinegar. In administering chloroform it is preferable to use small doses, which is the only rational method, for the mask should not be raised during chloroformization, whereas by the method of large doses it is often necessary to lift the mask after having produced a profound narcosis, and in this way the air reaches the patient's face too suddenly and causes nausea and vomiting, sometimes during the operation, sometimes after it.

Pacific Stomatological Gazette for February, 1896.

"SYPHILIS OF THE MOUTH," by G. MacGowan, M. D., Los Angeles, Cal., read before So. Calif. Odont. Society, October, 1895, (continued from page 91.) You have often heard of gummatous tumors and the fearful deformities caused by their ulceration. By a gumma is meant a circumscribed new growth, due to the influ-

ence of the virus of syphilis, and consisting of small cells, closely packed in the anatomical tissues, and presenting no capability of organization into connective tissue, but tending rapidly, when uninfluenced by treatment, to death, disintegration, and the formation of excavated ulcers. Upon the tongue they may have their primary seat in the mucous membrane or in the muscular tissues. No well-authenticated observation of a syphilide of the mouth pustular from its commencement has ever been made. So we have only these tertiary lesions to consider. All purulent ulcers of the tongue, due to syphilis, and not arising from a gravely irritated mucous patch are preceded by a gummatous nodule, originating within the tissues of the organ. This small tumor softens in its center, and breaking down towards its circumference, gradually enlarges, forming either a deep punched-out ulcer with steep sides and worm-eaten base, covered with a yellowish lardaceous membrane or mass, or a kidney-shaped sore with a livid areola and a sloping base, or covered with the same kind of membrane. Such ulcers are more apt to be one of a group than to be found single; this group forming not unfrequently the serpiginous signet of the Sultan of lues. The deeper its origin the greater the destruction of tissues following the decay of a gumma. But the tongue is a curious organ, seemingly capable to a great extent of regeneration; and however large the sores may have been, their cicatrices are seldom deformative.

The differential diagnosis of this disease from cancer of the tongue is based upon these points of distinction:—*Gumma of the Tongue.* 1. Is the growth of days or weeks. 2. Is a tumor which ulcerates. 3. Purulent discharge abundant and like soft and decayed cheese. 4. Pressure dislodges only caseous masses. 5. Painless or nearly so.—*Cancer of the Tongue.* 1. Is the growth of months or years. 2. Is an ulceration surrounded by a tumor, destroying it yet extending with it. 3. Discharge sanious and filled with gray or black sloughs. 4. Pressure dislodges sebum plugs, not unlike those found in erythematous lupus of the face, from the mucous membrane surrounding. 5. Pain at intervals shooting toward ear—diagnostic.

The ulcer of commencing cancer is generally oval, but may be a simple elongated fissure with a firm base and everted edges. The ulcer extends up to the border of the growth, but the latter

always keeps a little ahead. Its surface is irritable and bleeds easily. When the infiltration of the tissues becomes extensive it is accompanied by marked anemia and sallowness.

When an ulcerated gumma of the tongue is neglected or irritated there is much danger of cancer developing upon it. Unless these ulcerations of late syphilis upon the tongue have been under observation from the time of their first appearance it is difficult sometimes to positively distinguish them from tubercular ulcerations. But a proper attention to the points laid down when speaking of mucous patches of the mouth will generally help to do so.

The simple glandular ulcer, with its red rim, steep sides and soft yellow or gray base, without infiltration, and painful, cannot be confused, by an observant man, with a syphilitic lesion, secondary or tertiary. In the ulcerations of mercurial stomatitis, the blue line on the gums, due to the deposit of the metallic mercury about the necks of the teeth, and the swollen tooth-marked tongue, serve to distinguish it from the loosening of the teeth due to gummata seated about the necks of otherwise sound and painless teeth. It is to the infiltration of the hard and soft palates with tertiary growths and deposits that are due the most startling, disgusting and tedious results of ulcerative syphilis of the mouth. Sometimes the vault of the mouth melts away in a night. Without warning of their presence the gumma situated between the layers of the soft palate or within the hard palate, break down and unite the cavities of nose, mouth and pharynx. The quacking voice and pitiful efforts at swallowing of these victims are familiar to most of you. And, much to the credit of your calling, it is in these cases that the fertile resources of the dental surgeon have shown themselves frequently successful in relief. In two cases coming under my observation, one in my own service and another in that of a friend, I have seen the soft tissues overlying, and the alveolar processes of the upper jaw at the juncture of its two halves, become the seat of an immense and sluggish gummatous thickening, which after a long time became necrosed. This process in my case extended to the hard palate and dome of the mouth.

Before ever regarding the tongue as diseased it is well to remember that the normal appearance of this organ differs greatly as to its roughness, size, color, the length and number of its papillæ, etc.; and that any inflammation of it or its adjacent struc-

tures is apt to exaggerate this greatly. The scaly patches give most difficulty in differential diagnosis to the expert, and to those unused to seeing them are entirely confusing. For this reason I shall not give them consideration. I happen just now to have no well-marked cases of such patches to present to you at this clinic; I have never yet met with such a patch that was infectious. Those dry patches upon the tongue and cheeks, harsh and darker-colored than the normal tissues, found in the mouths of smokers, due to the pipe or cigarette, and appearing upon the side these articles are habitually held upon, need not be mistaken for scaly patches of syphilis.

I will finish my clinic by referring you to this chart marked No. 3, upon which are depicted the various modifications of shape and character observed in the teeth of children born of syphilitic parents. These deformative irregularities of the permanent dentine are usually accompanied by a stunted development of the skin and low vitality of the cornea. The name of Hutchinson's teeth is given to them, after the great English surgeon, Johnathan Hutchinson, to whose researches the primary description of their significance is due.

Stress is placed upon the formation of the central incisors of upper jaw. "The special pathognomonic sign of infantile syphilis is said to be a want of normal width of their cutting edges, so that instead of being broader there than at any other portion, they are narrowed, rounded, and have a peculiar crescentic edge, the surface of which is inclined upward and forward, instead of backward as in normal teeth. Besides, they are apt to be dwarfed in size, to stand apart, and to converge toward each other." These teeth are not excluded from the homes of the rich; but it is in orphan asylums and foundling homes that they are most frequently seen. My personal observation teaches me that the depressing influences of infantile tuberculosis produces a powerful modification upon the permanent dentine, often creating irregularities of the incisors and six-year-old molars, to be with difficulty distinguished from the so-called test teeth. So I have come to place greater value upon the change of character of teeth as diagnostic of infantile syphilis than upon modifications of their own shape. It is when I find in the position which should be occupied by a six-year-old molar one or two lateral incisors, or

in the situation naturally occupied by incisors, premolars or canine teeth being erupted, that I feel sure the syphilitic influence alone has stuck the pegs in the wrong hole, for I have never noticed this phase of deformity of misplacement in tubercular teeth.

In acquired syphilis, where the toilet of the mouth is poorly made, or not at all, and the individuals use tobacco, gingivitis, pyorrhea, and retraction and exposure of the necks of the teeth, even necroses of the jaw, sometimes occur where no mercury has been given. And really it would be interesting to know what influence syphilis plays in the causation of the badly retracted gums so frequently seen in your offices.

"DENTAL JOURNALS," by A. C. Hart, D. D. S., San Francisco; from report of Com. on Literature, California State Dental Ass'n., 1895. The mediums open for the mutual exchange of thought and experience, and the ones most available to every practitioner, are the dental journals. They bring us face to face with the representative men, the substantial men, the heart of our profession, who make us feel and do what they do, in proportion to our power of appreciation. Through them we become seekers and doers of scientific truths; able to defend our profession, and possessed of that practical influence so necessary to the lot of man. Practical, because they have been one of the great sources for the advancement of the standard of dentistry, in that they contain the latest of everything—in theory, practice and mechanical ingenuity. He who would hope to make a financial success of his practice cannot afford to be without them; and not to have read and practiced their teachings is to be counted behind the times and unfit for active service.

The proceedings of our State societies, much of which is published from time to time, if read, would keep us well posted with regard to the advancement of dentistry.

With such great facilities for the interchange of thought and experience, it is greatly to be deplored that so small a percentage of practitioners read the dental journals.

"INFILTRATION ANESTHESIA," by C. S. Payne, D. D. S., San Francisco, read before the Stomatological Club of San Francisco, Cal. This term means that there is an anesthesia produced by

infiltration or distension by hypodermic means in the part to be anesthetized. The part becomes devoid of sensation from the fact that, the tissues being infiltrated, the blood is driven from the part, interrupting the circulation at that point, and by the compression of the periphery of the nerves.

It was and is used by Schleich, of Berlin, in making capital operations, such as ovariectomy; and I understand he uses at different times a 2-10 of one per cent. solution of common salt, and at other times a very weak solution of cocaine and distilled water.

The formulas that I present, and the method of their introduction, produce a more profound anesthesia, and for a greater length of time. The first is:—Cocaine, grs. 1; Sul. Morphia, grs. 1; Carbolic Acid, mins. 3; Chemically pure German double dis. gly., drams 6; Aqua distilled, q. s. to make a two-ounce mixture. This is a 1 to 1,000 or a 1-10 per cent. solution of cocaine. From investigations on this line I can assert that, if a syringe-ful, or portion of a syringe-ful, be injected into the gum tissue around the tooth to be extracted, and enough force exerted on the piston of the hypodermic syringe to infiltrate the parts and produce a zone of anesthesia, as is evidenced by the whiteness of the part, it is possible to remove the tooth without one particle of pain.

This formula is balanced up as follows: There is just enough distilled water added to the glycerine to make it flow easily through the needle, and my claim for glycerine is that, on account of the thickness of its consistency when forced into a part, it creates as great, or greater distension; and, owing to the fact that it is of an oily nature, it slides, as it were, through the tissue, not causing any pain; and, again, on account of its thick consistency, it is absorbed very slowly, localizing the ingredients of the anesthetic and giving a longer anesthesia. There are forty-eight syringe-fuls in a two-ounce mixture, and if you removed all the teeth from the superior maxilla at one sitting, you would not use any more in any case than six syringe-fuls, in which there is $\frac{1}{8}$ grain of morphine, which is the ordinary prescribed dose to allay pain. The object of the morphine is to overcome that pain which occurs about an hour after an extensive case of extracting. There is no heart stimulant used in this formula, as, on account of the minute quantity of cocaine, it is not necessary.

Another formula, which I have used with much success, especially in cases of abscess, extraction of a single tooth, or a couple of them, is:—Cocaine, grs. 5; Sul. Morphia, grs. 1; Boracic Acid, grs. 10; Glycerine, drams 6; Aqua distilled, q. s. to make a two-ounce mixture. This is a 1 to 200 or a 1–2 per cent. solution.

These formulas are practically useless unless the method of their introduction into the part to be anesthetized is carefully followed. Your hypodermic syringe should hold twenty minims, and the needle should not be over $\frac{1}{4}$ of an inch in length. The dentist in using an anesthetic uses it almost exclusively for extracting teeth, hence he is injecting into the densest soft tissue in the body; and it requires a great deal more force to infiltrate this gum tissue than it does any other part of the body. The technic is as follows: Have a clean aseptic syringe, used for nothing else, and a bright needle; have the patient rinse the mouth with a 5 per cent. solution of carbolic acid; with the forefinger of the left hand press on the point on the gum about a sixteenth of an inch from the gingival margin, and turning the needle flat side down slide it in, using some force on the piston, and thus keep the anesthetic in front of the needle. The point of the needle being beveled, the anesthetic is forced at an obtuse angle from its opening, so the force of infiltration is in the direction just described, and by turning it you can direct and govern the area of the zone of anesthesia that is produced and is evidenced by its whiteness. For instance, if you were going to extract an upper first bicuspid, and you insert your needle as directed, by turning the flat side of the needle towards the second bicuspid you would infiltrate the tissues in that direction; and if you left the needle in the same puncture and turned the flat side towards the cuspid you would infiltrate in that direction. While you are injecting lay the forefinger of your left hand above the part being infiltrated at the point where the soft tissue joins the hard gum. If you find a reservoir, as it were, forming in this soft tissue, stop and make a new puncture in between the teeth; kept out of this soft tissue, as it will cause swelling. When you have the tissues on each side of the tooth so thoroughly infiltrated that they become white, that is sufficient and all that is necessary to accomplish a perfect result. After infiltrating the gum around the tooth, I force the flat side of my needle against the tooth and force it

down between the alveolar process and the tooth, and then, by pressure on the piston, force the anesthetic clear to the end of the root.

These formulas are practically harmless in almost any hands, and their efficacy is not due so much to the ingredients used as it is to the infiltration and localizing effect of the glycerine—being due almost entirely to the latter; for I am able to get the wanted result with the glycerine and this combination which I cannot get otherwise, although I may use the other ingredients in the same proportions. The glycerine must be absolutely pure double-distilled, otherwise it retains properties which are very irritating and will defeat the end you wish to accomplish.

Just why the eminent men whom I have mentioned use a solution which is near the salinity of the blood to infiltrate a part, except it is on account of its non-irritating properties, I cannot understand. This salt solution facilitates osmosis, and you lessen the duration of the infiltration. In the mouth, at any rate, the use of glycerine in infiltrating the part gives an anesthesia which lasts nearly twice as long, and the anesthesia is infinitely more profound.

The Buffalo Medical Journal for February, 1896.

"A NEW STYPTIC." Roswell Parks (*Medical News*, Nov. 16, 1895,) reviews his experiences with a spray of 5 per cent. solution of antipyrin, made up with sterilized water, as a styptic in surgical operations. He has found it an especially useful measure in parenchymatous oozing which complicated operations. It has been tried by many surgeons and found useful, having no deleterious effects, no matter where it was used. He has since found that a combination of antipyrin and tannic acid is still more useful. This mixture precipitates a thick, gummy, cohesive substance, which offers the most ideal styptic for certain purposes. An alcoholic solution of tannic acid is used and antipyrin added in quantity sufficient to form a precipitate of required consistency. This substance is particularly useful in hemorrhage from bone, for instance, in operations upon the cranium. A small piece of sponge or cotton sopped in it may be forced into a bleeding tooth socket, and in many other ways it may be very useful. There is but one attendant difficulty, due to its remarkable cohesiveness, that when

the time comes for detachment or separation it is difficult to remove it. Sometimes it has been necessary to wait for the formation of granulations and separation by natural process.

Journal of American Medical Ass'n. for February, 1896.

"COMMON GROUND OF MEDICINE AND DENTISTRY," by Joseph Roach, M. D., Baltimore, Md.; read before the American Medical Association, at Baltimore, May, 1895. For convenience, I will call dentistry one of the specialties of medicine, although it might be shown that it is so distinct and so peculiar as to make it well nigh a thing by itself and difficult to place with any of the specialties. If it be surgery, many operations consist in cutting out the decayed parts in an organ so constituted that it has of itself no power to make use of the *vis medicatrix naturæ*, found in other organs and tissues, and with filling the same with some foreign material. The sole use of that material is to prevent further progress of the disease and to serve as a substitute for grinding and cutting food.

There is no blood, no ligation of arteries, no stitches, no sutures are made; and the patient is dismissed on the spot cured by a surgery, of which it might be said, that its only relapses are due either to mechanical imperfections in the operations or to inherent faults in the structure repaired. True it is that one department of this work trenches on surgery thus far, that in the exploration of the canals, occupying the roots of teeth, either by a failure to remove living tissue or a failure to disinfect any decomposed tissue, a local sepsis may occur, resulting in abscess and occasionally invoking grave consequences. But even this does not ordinarily rise higher in the scale of surgery than the treatment of a felon on the finger. I have thus purposely taken a low view of the daily work of dentistry for this reason. I think possibly too much pains have been taken by its membership to elevate a most useful, nay, a most indispensable calling, into a position to vie with surgery proper. I say daily work, for while it is true that, as dentists, we are occasionally called upon to repair a fractured maxilla or even extirpate a tumor of the jaw; such operations are but occasional, and in the nature of the case it seems to me to fall as naturally into the domain of the general surgeon as does the fracture of the femur. The true usefulness of the dental surgeon

in such cases rests in his ability as mechanic to skillfully form and adjust special splints in case of fracture. This ability he forms from his daily work noticing artificial dentures, or in his possessing special cutting instruments in the form of burs, etc. for the dental engine, instruments peculiarly adapted for his own work in removing decay from teeth, and turned to occasional use as above in removing tumors. Still, none the less skillful is the work of making plates, crowns, bridges, etc., where to the dexterity of the mechanic must be added the fine eye of the artist, restoring sunken features, harmonizing incongruities, and above all, and most perplexing of all, pleasing or failing to please the tastes of fading humanity.

But while all the above may be true, and the work of the average dental surgeon may be largely mechanical, the fact that both the surgeon and he work on the human body makes a bond of union between them which is worth study, inasmuch as whatever links in this bond are found to be the common property of both are of much greater interest than any dissimilar points.

Of the maladies of common interest I will mention those often obscure and occasionally grave diseases that involve the maxillary sinus. This is obvious, for the reason that in such cases the dental surgeon very often is apt to be the first observer on the ground. For whether we view these diseases as arising from diseased teeth, or from some more remote and obscure cause, the dental surgeon, if he be ready to take up such cases for himself or turn them over to the surgeon, is none the less called on to diagnose accurately the symptoms, that they may be treated as purely from tooth-trouble or he may proceed on some other line. It is not in the province of this paper fully to describe all the various troubles that may arise in the maxillary sinus, but if you will throw with me a rapid glance at its position and uses, it will be of service in following any line of treatment that may be suggested. It is situated above the so-called jaw teeth on either side of the upper jaw, and extending from the first bicuspid (sometimes the cuspid) backward to the second molar of the same. Its size varies, its exterior or facial walls are quite thin, the palatal wall stronger, and its floor very variable in shape and thickness. The only opening into it upward is into the nasal cavity. The situation of the cavity is surgically important, for

when we consider the tendency of all mucous-membrane covered surfaces to catarrhal troubles, and the position of any cavity without natural drain, shut in by bony walls, and its only outlet narrow and pointing upward, we see at a glance how the difficulty or impossibility of any natural drainage, and the tendency of fluids once accumulated, could give even more trouble than does occur. Indeed, if we consider the tendency of catarrhal troubles to spread by continuity of surface, it seems a wonder that all cases of chronic nasal catarrh do not involve engorgement of the antrum itself. Certainly this is what one might expect. Yet it would seem that this is not only not true, but that, on the other hand, certainly from the partial view of the case taken by the dental surgeon, the lighting up of antral trouble can be traced often to diseases of teeth, the roots of which lie under its floor.

The dissecting table reveals to the dental pathologist a curious state of affairs just here; but, in order to grasp this situation fully, it is necessary to state what comes much more closely under the observation of the dental surgeon, a fact that only the physiognomist studies as it should be, and that is, that inheriting our tendencies we inherit a mixture. Small jaws with large teeth are the rule, occasionally large jaws with small teeth; the back teeth of the father and the front teeth of the mother, or vice versa. The jaws are sometimes so narrow and cramped, and the teeth so large, that they crowd each other, and such a lack of blood in the jaw, from non-use in mastication, makes bone and muscle without stamina. The result is, that the large teeth of the upper maxilla, the roots being formed physiologically, by addition to their length, are either forced through the floor of the antrum, or else, in the evolution of that chamber from six years to twenty-one, the periosteum fails to build thickly enough to cover those roots.

They are, however, always covered by the membranous lining of this cavity, else the vessels passing into the foramina of these teeth would be exposed to the atmosphere. All this is not likely to involve the antrum in pathologic trouble so long as the roots of these teeth are sound, but it may be fairly stated that more than one-half of the patients falling into the dentist's hands sooner or later have pulpless molars, the roots of which project through the floor of the maxillary sinus and are objects more or less irritating to the tissues against which they rest. Again, in

the case of molars, the roots of which do not pass through the antral floor, in the event of devitalization an ordinary alveolar abscess may occur, with the sequelæ of absorption of the alveolar plate at the tip of the root and the outflowing of pus into the antrum itself. It is true that an abscess in such situation might not be of grave consequences, yet it is plainly a situation of risk. This may not often exist, for the reason that the widely forked roots of the upper molars, and their nearness to the outer walls of bone, cause development of fistulous openings away from the antrum, yet it is a source of danger and as such should be studied. Dentists devitalize and remove the pulp from the roots of such teeth. This is a very usual, almost daily, operation. But while an earnest and faithful effort is made to perform this operation thoroughly, so attenuated are the canals of the molars that it is not at all certain that all the pulp is removed. In such a case it is easy to see that any filling material forced into the root canal may force particles of dead tissue through the foramen and into the tissues above, inoculating these with septic matter; or if disinfectants have been used there, such as carbolic acid, corrosive sublimate, etc., they may be forced through to the injury of a tissue which has, as described in the outset, no drainage in case of chronic irritation. I have said enough on this subject, I dare say, to call your attention to certain lesions of the antrum that are common ground of observation and treatment of both dentist and surgeon, and call attention in conclusion to a case, sometimes very grave, always painful, that of an impacted and abscessed lower third molar.

The same causes to which I have already alluded as dwarfing the upper jaw, conjoin to make the lower both small and short. In the evolution of the lower wisdom tooth it seems less often to share in the dwarfing process than the corresponding upper tooth. In a word, it is often too large for the space between the second molar and the angle of the jaw. In consequence its eruption is so interfered with that it may be either only partially erupted, or it may be impacted at an angle against the second molar, appearing through the gum slightly or not at all. Abscess of this tooth often involves not only the tissues immediately around it, but the tissues of the throat become inflamed and grave results ensue. It is pretty well established that throat trouble of a seri-

ous or even fatal character has been set up by an agency seemingly so unimportant. Abscess opening into the pharynx is certainly one of the sequellae of this trouble. I have been told of cases where the infiltration of pus between the muscles of the neck and connective tissue proceeded to the formation of fistulous openings on the stomach, with ordinary results of blood poisoning.

I have said enough to indicate a common ground for dentistry and surgery.

"PATHOLOGY AND ETIOLOGY OF THE DISEASES OF THE ACCESSORY CAVITIES OF THE NOSE"—Our knowledge of the morbid processes in the accessory nasal cavities is very limited. The inaccessibility of these places is no doubt largely responsible for this fact. A very important step was introduced by Harke, who devised a practical method of gaining access to the interior of the nose and adjacent cavities during post-mortem examinations without any disfigurement of the face of cadaver. The method is as follows: After removing the brain in the ordinary method the soft parts are reflected anteriorly down to the root of the nose, posteriorly down below the foramen magnum. Then the floor of the skull is divided in the median line by means of a keyhole saw from the nasal bones in front to the occipital foramen behind, keeping as nearly as possible to the median line. Now the two halves of the skull are separated by means of a broad chisel and mallet, and as the nasal and pharyngeal cavities come into view, the pieces of mucous membrane may be cut across with the knife or scissors so as to prevent further tearing. With the hammer and chisel the axis may be divided. The two halves of the skull are still connected by the nasal bones, the maxillary process of the upper jaw and the palate; strong traction will separate these bony connections without injury to the soft parts, and the lateral halves of the skull will yield sufficiently to allow inspection down to the vocal cords. The partitions between the accessory cavities are readily cut away with scissors.

Among fifty cases examined exclusively for the purpose of showing whether the normal mucous membrane of the accessory cavities of the nose is free from bacteria or not, Fränkel found only twenty-eight to be available for this purpose, *i. e.*, normal,

and of these twenty-eight only thirteen were completely sterile. The remaining fifteen showed micro-organisms to be present most often in the antrum of Highmore (eleven times), then in the frontal sinuses (six times), and least often in the sphenoidal sinuses (five times). Without going into complete details it may be said that the following microbes were found in the order of frequency in which they are named: The diplo-coccus lanceolatus, the yellow pus coccus, an organism morphologically like the bacillus diphtheriæ, the bacillus coli communis, and two hitherto undescribed bacilli. The diplococcus lanceolatus was found oftener than the others in each of the cavities; it was frequently single, but also in company with some of the other microbes named, most often with the pus cocci. From the results of this phase of his studies Fränkel concludes that in a large number of normal accessory nasal cavities there occur micro-organisms which, we know, play an essential role in the inflammatory processes of the respiratory tract. In 40 per cent. (sixty-three cases) of the post-mortem examinations of the nasal cavities there were morbid changes present. In thirty-seven cases the process was limited to a single cavity. The antrum of Highmore thirty times (right seventeen, left thirteen), and the sphenoidal sinuses seven times. In eighteen cases two cavities were involved at the same time, both antra of Highmore seven times, one sphenoidal sinus and antrum of Highmore eight times, both sphenoidal sinuses once, one sphenoidal sinus and one frontal sinus once, and frontal sinus and antrum of Highmore once. In six cases three cavities, and in one case four, and in one case all six accessory cavities were involved. The general result may consequently be said to show that the antrum of Highmore furnishes by far the largest contingent of cases of disease of the accessory nasal cavities, then comes the sphenoidal sinuses, while the frontal sinuses furnish but a small number of cases. Systematic examinations like this are the only means that would lead to any definite information concerning the relative frequency of disease in these various centers mentioned.

In regard to the nature of the pathologic processes present, Fränkel found that inflammatory or exudative changes are by far the most frequent. The exudate may be serous, mucous, muco-purulent, purulent or sanguineous. The quantity is variable. In quite

a number of cases the mucous membrane contained cysts which most likely were due to retention. Zuckerkandl doubted the ability of the mucous membrane of the antrum of Highmore to form pseudo-membrane, but one observation of Fränkel's shows that it may form fibrinous false membrane. The histologic changes in the mucous membrane most frequently present were those more or less characteristic of inflammation. The microbe most frequently found in the diseased cavities was, again, the diplococcus lanceolatus, quite frequently in association with other germs, especially the pus microbes. Various members of the latter group were also found alone. Once the influenza bacillus was demonstrated to be present, the cause of death being pneumonia in the course of influenza. The colon bacillus was found once. A bacillus mucosus capsulatus, Fränkel, hitherto undescribed, was also found in a few cases. The action of these various micro-organisms is inconstant, and the character of the changes present does not allow any inference as to the kind of infection at hand. The same microbe may cause different forms of disease.

Suppurative processes in any of these cavities always form a menace to the health and life of the individual. Both Harke and Fränkel call our attention to the fact that in atrophic and marasmic children it is not unusual to find chronic suppuration in the antrum of Highmore that might be regarded as the source of a chronic intoxication. Fränkel has also observed a case in which a chronic empyema of the frontal sinuses was followed by thrombo-phlebitis of the longitudinal sinus and consecutive pyemia. In general infectious diseases as, for instance, fibrinous pneumonia, inflammatory conditions of secondary origin may arise in the nasal accessory cavities, which may become chronic and in turn act deleteriously upon the whole body. While Zuckerkandl regards the diseases of the accessory cavities as oftener secondary to nasal affections, Harke and Fränkel both conclude that in the main the acute inflammations of the accessory cavities are entirely independent of the affections of the nose proper. It is a significant fact in support of this view that Fränkel in his investigations found only nine cases of disease in the main nasal cavity and that in five of these the mucous membrane of the accessory cavities was normal. It is also a quite general belief that the most frequent cause of empyema of the

antrum of Highmore is the extension of morbid processes connected with the teeth or their alveoli. This view is upheld by Zuckerkandl. Harke and Fränkel both find, however, that the frequency of the dental origin of inflammation in the maxillary sinuses has been greatly overestimated. Out of all his cases Fränkel found only two in which the process in the antrum could be referred to the teeth. Fränkel consequently makes the general statement that in the majority of instances inflammation of the maxillary sinuses develops independently of pathologic changes in the neighborhood, and that certain general diseases play a much more important part in its pathogenesis than has been assumed. These anatomic studies also seem to show that the relation of nasal polypi and of inflammatory swellings of the infundibulum to the diseases of the antrum is the reverse of the usual teachings, in so far as no evidence has been brought forward that polypi and the like are secondary to disease in the antrum, which is the view usually held by the clinicians. Finally, attention is also directed to the fact that the inflammations in the mucous membranes of the accessory nasal cavities do not seem to give rise to lesions of the bones unless specific processes like tuberculosis, syphilis, or leprosy are present.

The Ohio Dental Journal for February, 1896.

"CAPPING PULPS," by Dr. Gordon White, Nashville, Tenn.; read before Southern Dental Association, Nov., 1895. I believe that, in the field of dental operations, the capping of the dental pulp is as successful, properly performed, as the average dental operation. Capped pulps do live. My method of capping is as follows: The patient rinses the mouth with as warm water as can be used comfortably, to which is added a little alcohol or a few drops of an antiseptic. The cavity is then washed with warm water from the syringe and is excavated as usual, and occasionally wiped out with a small pledget of cotton saturated with chloroform. Using sterilized scissors and foil pliers, a made cap is cut "from a prescription blank" and dipped in chloroform, which quickly evaporates, leaving the paper of its original stiffness, and sufficiently sterilized. On this cap with a small pointed sterilized instrument is placed the smallest particle of a chloro-percha solution to the chloroform, and in making the solution,

fifty grains of aristol to the ounce of chloroform should be added. This little plaster is turned over on the point of pulp exposure and gently pressed to position with the smallest piece of spunk, and a few drafts of hot air thrown on the cap, which evaporates the chloroform from the solution, leaving the cap sticking to its position, when thin cement is flowed over it and the filling inserted as desired.

"AN INTERESTING CASE," by M. H. Fletcher, M. D., D. D. S., Cincinnati; remarks before Miss. Valley Society, 1895. Ten days ago I took from the lower portion of the left side of the lower jaw a small tumor, which has the characteristics, as far as I can tell, of a malignant growth. It seems to me these tumors have an exciting cause, and these causes may in their origin be connected with the pathology of the teeth. They may arise from the extraction of teeth. This case that I speak of that I treated ten days ago was sent to me after a week's suffering from an extracted lower molar. There was intense inflammation of the lower jaw on the left side. The bone about the sockets of the teeth was highly inflamed, and the soft tissues were exceedingly tender. I took this, at first, to be a matter of poisoning from bad forceps, unclean forceps. Whether such was the case or not I do not know. Since then an additional tumor has shown itself just posterior to that one; and ten days after taking this tumor off I found it one-half the size it was before. That was about ten days ago—pretty nearly time for it to return again. If I still find that growing, that is, if it has started again, I shall feel considerably exercised over this man's future. He is a strong, healthy man, thirty-five years of age, and has every condition about him to indicate that he has a malignant tumor, so far as I could see. This particular specimen is of special interest, from the fact that a molar tooth, superior wisdom tooth, has been carried clear out of its place, the crown of it directed toward the nose, but about the junction of the vertical plate of the palate bone where it joins on the superior maxillary. Here I consider the exciting cause. I found between the teeth where this had been—an incision was made after the amputation—and I found a membrane going in from the mouth, showing that irritation of some character probably started at that place. My theory is, that from dental lesion there was sufficient irrita-

tion of the periosteum on the floor of the antrum to start a growth in that particular position. As the history, which I read, shows, this tumor started at about five years of age. At that time the dental follicle holding the wisdom tooth was far enough back, and far enough up in the antrum at that point, which I expect to explain in one paragraph, to undermine that follicle, taking with it the bone that surrounded it, that is, making a complete circuit, almost coming around until the crown of the tooth points toward the nose; and it can be accounted for in my mind only in that way; this tumor, starting at the edge, simply carried with it the dental follicle and its surrounding tissues, and pushed it about the antrum until it was finally landed where you will see it on examination. This case is very interesting to us because of this particular feature of exciting causes which may arise from teeth. The exciting causes may be old roots of teeth, salivary calculus, alveolar abscess, in fact, anything that continually irritates the tissues in these localities; so that it behooves us as a profession to look after these things, and be ready when there is a semblance of cause of that kind of trouble to remove it. The rough edges of worn teeth, broken teeth, everything of that character that can irritate the mucous membrane, may cause a malignant tumor.

The International Dental Journal for February, 1896.

"RESISTIBILITY," by Dr. G.A. Mills, New York. We are indebted to the late Prof. Garretson for the use of this term, and we think that a consideration of its wide-spread application might be profitable. We are sure that as dentists we are widely at fault in the care of our patient's humane interests. Doubtless the cause of this lies in the fact that mechanics have ruled a larger part of our procedure in practice. The need of the hour was never so apparent that we should know what to do and why we should do it.

True science has not been our practical leader. While a few have had the ambitious industry to investigate, too many more have laid back and cavilled at the impracticability of "so much science." But who will have the hardihood to say that these delving labors have not caused us to be face to face with the stern necessity of true scientific knowledge, so that the best may be done with our daily practice? We should say thanks to those

who have given us some facts that now form a nucleus for future, better doings. Dealing with life is a more serious and responsible affair than many take into their thoughtful consideration—some from a lack of thought, and many more because of their mad race for gain. We wish that the hope for better things might be looked for among the mass as the advance along the lines of a more liberal culture that just now we hear emphasized is carried out. "Resistibility," simply interpreted, means how much can the bodies bear from us in the application of what we apply as remedial. Disease always advances in the lines of least resistance. Some bodies are so fortified that a vast amount of malpractice will make no inroad, while others are easily affected and laid under great stress of danger, sometimes beyond the possibility of recovery. We are constantly coming in contact with such evidences. "Health is the most perfect germicide." This maxim embodies the whole subject in a nutshell. Idiosyncrasies are more or less exceptions to the rule that is considered general. The application of this knowledge, found in the term we are considering, is invaluable in making a diagnosis. We say that some are born with endowments—special, of course. They have an advantage; but study and observation will, or can, enhance an acquired ability. Some have not the capacity ever to attain the ability for helpful service to living tissues. They have no surgical capacity. As an illustration: In a case where alveolar abscess had been dealt with successfully, but the practitioner did not know it, and had vigorously used the bur, and the result was that he had produced a large ridge of scar tissue which he mistook for a further disturbance. The patient died not long after, not because of this blunder, yet had he lived he would have gone on inflicting his ignorance. Never was there more need of care and caution in the thought of our subject than these days of parlor machinery that is so manifested in practice. We do believe in the value of motor power in our practice, but we also tremendously believe it is shockingly overdone. Too much of this is for effect, and some in order to be on a footing with our neighbors. It should be always our desire to perform operations within the line of the least infringement of sacrifice in time and endurance that may be essential for the best results. Indefinitely we could enumerate the lines of application of this term.

"HYPNOTISM; ITS VALUE TO THE DENTAL SPECIALIST," by D. G. F. Grant, Boston; read before the American Academy of Dental Science, Oct. 2, 1895. It seems too great a trespass upon your time to enter into the history of hypnotism, for it extends very far back into the earliest of recorded history. My wish is to take up the latest writers and observers on the subject and glean from them what can be made valuable to us. One will find here rather puzzling variations of views. First, as to the methods to be employed in the induction of the hypnotic state. Second, as to what percentage of people are susceptible to hypnotic suggestion. There are many other points upon which the opinions of students of this science differ, but I have selected those bearing most directly upon what it is desired to consider in a short essay.

The first great question is upon the means of producing hypnosis. Abbe Faria said, in 1815, "The cause of sleep was in the person who was to be sent to sleep." "This (says Moll) is the main principle of hypnotism and of suggestion." Besides this we have the rapidly-revolving mirror of Luys, used to produce speedy and extreme fatigue of the eye, the magnetic pass used by older magnetizers, the sound produced suddenly by striking a large gong, or a sudden ray from a Drummond light. The effect can be produced through a sense of touch, even by gentle stroking of the skin. Others produce it by touches on the forehead, pressure upon the eyelids, etc. Then comes fixed attention, which is considered by some as the only means, while others combine it with mental methods, as Bernheim does. Dr. Bonwill, in a paper on this subject, lays great stress on self-assertiveness on the part of the operator, and that "suggestion should be made in a loud, commanding tone, like a general commanding an army." Dr. Warren and Dr. Faught, in discussing the paper, agreed that loudness of speech and commanding tone were quite unnecessary, as the same result could be obtained by a quiet tone. Professor Newbold says, "Of all the means of heightening suggestibility with which we are acquainted, none is so easy of application and certain in its effects as the concentration of attention and limitation of the conscious field." Dr. Osgood, of this city, says that the passes are unnecessary and smack of charlatanism.

I will now call your attention to the question of susceptibility.

Some claim the ability to hypnotize all subjects, even against their will (Donats), while others place the percentage very low. Liebeault claims ninety-two per cent., Delbeouf eighty per cent., Bernheim and Ford claim over eighty per cent., while Bottey claims only thirty per cent., and Moll only twenty per cent.

It seems to be generally agreed among men who have used hypnotic suggestion as a therapeutic agent, or as a means of performing painless surgical operations, that many complicated conditions exist, or may arise, which can only be properly met with by a systematic training, followed by careful and oft-repeated experiments. All this precedes the application of this science. We must first master the subject, then apply it to our specialty, if we intend making use of it.

Here a thought occurs which to me seems to have an important bearing upon our view of expediency. The medical man would in all probability not find it necessary to induce the hypnotic state in many cases daily, nor would the surgeon perform operations continuously every day for from six to eight hours, as the dentist does. The majority of patients who visit the dentist require operations of a painful nature, while of those visiting a physician only a small percentage require or receive immediate surgical treatment. This seems to me an important point for consideration, as even the most skilful or enthusiastic hypnotist would find that, whether he gave himself up to his subject or the subject submitted wholly to him, there would be so great a drain upon his mental force from such a continuous exertion, that when added to the physical and mental strain, inseparable from daily practice, it would tax the ordinary practitioner beyond his strength.

This seems a moderate view of this aspect of the question. While most of the men who have written, especially upon the dental side of the question, have given the impression that the art is easy of application, the very reverse is true of what the medical writers have to say. This is rather remarkable in view of the peculiarly sensitive organs upon which dental operations are to be performed; and, further, that all authors are not agreed that insensibility to pain is a feature of hypnosis. One rather gets the idea that that it is a condition of unconsciousness of pre-existing pain, rather than insensibility to inflicted pain. A consideration

of these observations rather leads to the hypothesis that the dentist sometimes mistakes a faith established by his reassuring manner for an hypnotic condition. I think Dr. Bonwill's paper on hypnotism is a stronger exposition of what may be accomplished by considerate preparation of a patient for operation than it is of the value of hypnotic suggestion.

There is this much to be said of the results of investigation of this subject in the hospitals abroad, notably those of France and Germany, where most is known and the most extensive experiments have been made, that their results can only be regarded as establishing the existence of this great power for the benefit of mankind under conditions of nativity, habit of obedience, and strong predisposition to accept what is offered in the way of treatment. We all know that hospital practice is a widely different thing from office practice, and, if I am rightly informed, the physicians of foreign hospitals exercise far greater powers over the patients in such institutions than are permissible in kindred institutions in this country.

In my opinion the more thoroughly one reads and investigates the subject, the more clearly the fact is established that for our purpose it presents too many complex problems and requires much further investigation by minds trained to that especial kind of work. If it is to be used as an adjunct in dental operations, patients should bring their trained hypnotist to the dental chair, leaving the dental specialist to the performance of his legitimate functions. In support of this last clause I cannot find better words than those of Dr. Osgood: "The dentist has no business to try to relieve every trouble of which a patient may complain, any more than I have to clear out a dental cavity without proper education and experience."

The Dominion Dental Journal for February, 1896.

"USE AND ABUSE OF THE DENTAL ENGINE," by Mark G. McElhinney, Ottawa, Ont. Amongst the many appliances necessary to the dentist the engine is one of the most important. It can accomplish easily and in a short time what, by hand, would require considerable force and a much longer time. Having, as it has, so many good qualities, and offering, as it certainly does, so many short cuts on so many operations, it is not surprising

that it should have become almost universally abused. Not only is the engine itself wrongfully treated, but it is used in operations where, in the common interest of humanity, it has no business. A dental engine is a piece of fine machinery and must be treated as such. It should not be subjected to strains greater than it is intended to bear. It will carry a certain size of tool in the hand-piece, according to the strength and stiffness of the arm, cable or cord attachment, and if a larger tool is used the engine will suffer. It will stand a certain pressure upon the tool, and if the pressure be increased unduly there will be trouble. The chief wrong uses to which the engine is put are grinding up artificial teeth and boring holes in metal. It is false economy to use a fifty dollar engine upon work that can be better done on a ten dollar lathe and a dollar drill-stock.

One of the tests of a good mechanic is delicacy in handling tools. A true mechanic will apply just the required amount of force to accomplish the object, and not a particle more. Moreover, a skilful mechanic always maintains a counteracting force which is used to guard against the slipping or breaking of the tool. It is this guarding that enables the tool to cut so far and no farther. There is no tool used in dentistry that requires such skillful handling as the dental engine. Mechanical skill is the foundation of dentistry, and no one can hope to excel who is incapable of mechanical training.

I have seen a dental engine used upon artificial teeth with pressure sufficient to grind an axe, the engine sticking, jerking and slipping until I expected to see it fall to pieces, like the parson's one-horse chaise, of old time story. An engine used like this will be a complete wreck in six months, and then the dentist will abuse the makers because it will not do the work of a small machine shop. A good engine will, with good treatment, last a long time, probably as long as the ordinary dentist lives to use it. A dental engine must be used with continual regard towards its lightness and delicacy of mechanism. It must be cleaned, oiled and adjusted as often as is required to keep it at its best. It requires very little oil, and that must be of good quality. Great care must be exercised in taking it apart. There is nothing so unsightly as battered nut-corners and scratched screw-heads, whether they be on a dental engine, a gun or a bicycle. It must

be borne in mind that set screws and nuts are powerful levers, and can exert a force far greater than the material and surrounding parts can bear of themselves. If a dental engine is allowed to get loose and unsteady, it entails much more suffering upon the patients, and, therefore, the condition of a dentist's engine is an index to his consideration for his patients.

The abuse of the engine in operating is a far more serious part of the question. It requires as great or even greater skill to use the engine than it does to work by hand, and yet it has been remarked that the poorer the operator the greater use he makes of the engine. It has also been noticed that in the dental colleges the engines were always in greatest demand by those who were the least fit to use them, and consequently the suffering caused thereby was much greater than necessary. Clinical instructors should pay particular attention to the manner of use of the engine by students, especially as few students have much to do with that instrument before entering the infirmary.

That the engine is abused, even by dentists, is shown by the fact that patients, as a rule, have a horror of it, and many neglect their teeth on account of their fear of its use. A good general rule may be deduced from experience, and that is, never use the engine on sensitive teeth except where the requirements of the case demand heroic treatment. By sensitive teeth is here meant those having sensitive dentine and those sore from periosteal and kindred troubles. Many persons have a positive horror of the buzzing sensation of the engine, and it is willful and unnecessary cruelty to use it where any other means are possible. To accomplish many operations by hand certainly takes more time, and time is money, but reputation is money also, and in the long run the balance will be in favor of the dentist who avoids causing unnecessary pain. In ordinary superficial cavities well-shaped and sharp excavators will accomplish the work in very short time, almost painlessly, while a bur used even very carefully is liable to cause some inconvenience. Much of the discomfort attendant upon dental operations is not so much in actual suffering as in the anticipation of it; hence, the dentist should avoid the use of whatever will, by its intricate and formidable appearance, suggest the possibility of pain. The engine is a most formidable looking instrument, and to some patients suggests the horrors of

the inquisition, therefore it behooves the dentist to keep the afore-said formidable instrument as much in the background as possible.

The later models of electro-dental engines, by their compact form and general innocent appearance, are a great improvement in this respect, provided always that the wires are concealed, for few things produce such creepy feelings in the lay mind as the "deadly wire."

"AN UNCOMMON CASE"—Dr. Daish writes about a case which is very interesting in reference to its successful treatment, and especially its etiology. A girl, thirteen years of age, presented herself at the office on the 23d of June, with a swelling on her lower jaw, left side. The first molar and first bicuspid were quite healthy, the second premolar also appeared to be sound, but as this was the last of the temporary teeth, it was extracted in the hope of reducing the swelling and giving the second bicuspid an opportunity to erupt. The roots of the temporary tooth were only slightly resorbed. As some pus came out of the alveolus after the extraction, a poultice was prescribed for a few days. The girl did not come back till after several weeks. The poultice had been used, as there was still pus which had a very disagreeable odor. On the 13th of August she was sent to the hospital, and on the following day she was put under the influence of chloroform to find and remove the second bicuspid. The swelling was about the size of a hen's egg, into which an incision was cut from the first molar to the first bicuspid. A large quantity of disagreeable pus flowed from the cut. After much probing the tooth was found, but the position of the roots could not be determined. All attempts to extract it failed. It was determined to pack the incision with iodoform gauze, and wait for a few days. The tampon was renewed every day after the cavity was syringed with boric acid. On the fourth day it was possible to again find the tooth with a probe. It was now close to the first bicuspid, and not far from the opening. Unfortunately in probing it was pushed back to its original place, from which it could not be removed. On the following day, on removing the tampon, it was again found close to the opening, and, with care, was removed with an elevator. Patient remained in the hospital three weeks, during which time

the wound was treated daily with kali permangan. or boric acid and iodoform gauze. From what could be learned from the girl, the malady was caused by a fall down a flight of stairs some four years previous. A few days after this accident the premolar became very sensitive, and mastication was difficult, but she did not complain nor consult a physician until it took this aggravated and painful form, when she consulted Dr. Daish. In examining the extracted bicuspid he came to the conclusion that in falling a blow or pressure was exerted on the developing root which injured the pulp and caused it to die before it was fully developed. — *Monatsschrift für Zahnheilkunde.*

Items of Interest for February, 1896.

"COCAIN," by Dr. F. S. Brooks, Martinez, Cal. Being interested in Dr. N. S. Hoff's article on "Cocain," I will give my experience. While agreeing in the main with the Doctor, I think he is slightly in error in stating that cocain should never be used in stronger than two per cent. solution, unless he refers to the pure article, uncombined with other drugs, which I do not consider safe, even in two per cent. solution, for indiscriminate use hypodermically. I have had a number of disagreeable experiences with it; one while using the pure cocain in two per cent. solution. The patient was a strong healthy man of thirty-five years of age, had formerly traveled with a circus, giving exhibition of his strength of jaw and teeth. I injected into the gums of a tooth he wished extracted about five minims of the solution of cocain. He immediately became very pale and nervous, then perfectly limp and unconscious, the perspiration fairly pouring from his body, the heart almost ceased action, and respiration became difficult. He was immediately placed in a horizontal position and allowed to inhale alternately for a few moments nitrite of amyl and ammonia, which had the desired effect. I was able to proceed with the extraction in a half-hour. I know of no way by which you can foresee these evil results. They seem to occur as frequently with the strong as with the weak.

I have used solutions of the pure article in strength varying from 1 to 5 per cent. many times with no bad effects, and usually as good results from 1 per cent. as from 5, except where there was some inflammation. But the exceptions to this rule are too

numerous, so I use this formula:—Atropin sulf., gr. ss; Strophanthin, gr. 1-5; Carbolic acid, gr. 5; Cocain mur., gr. 20; Water, q.s. 1 ounce. M.; which, as will be seen, is a 4 per cent. solution of cocain. I have used this in several hundred cases with no bad effects. Some time ago I reduced the quantity of cocain to 15 grains, thus making a 3 per cent. solution. I also add 5 to 10 drops of glycerine. The results are very satisfactory. The advantage this formula possesses over that of Dr. Hoff's is, that it is always ready for use, as it will keep indefinitely. I have kept it good over six months. I have on more than one occasion extracted as many as seven teeth at one sitting. My method, where I have a number of teeth to extract, is to inject the solution into the gums on both sides of one tooth, then extract it and proceed with the others in the same way. In this way you avoid getting so much of the drug into the system as when you inject around all the teeth before extracting, and it is not necessary to wait, as some say, ten or fifteen minutes to get the full effect; it acts immediately. I have used it on all classes and conditions of people, neurotics, consumptives and people with very weak hearts, and so far have had no trouble. It acts like magic in extirpating live pulps.

The Dental Cosmos for February, 1896.

"FOUR CONSOLIDATED DENTAL IMPLANTATIONS," by Dr. Oscar Amoedo, Professor of the Ecole Odontotechnique of France. About two years ago Miss P. noticed that her two superior right incisors were elongating and aching, though they were not decayed. She went to a dentist, who, she says, having extracted the central incisor, discovered an abscess at the end of the root. He then made her a small plate of rubber holding an artificial tooth.

A few months ago she was greatly astonished to find that her "false tooth" was also elongating. She then noticed a tooth appearing in the spot from which the central incisor was extracted. Ever since she has been unable of course to wear her artificial denture. When she came to consult me, I found her dentition to be as follows: On the left side the first bicuspid had lost its crown three years previously. Its roots were perceptible at the surface of the gum. On the right side there was still the temporary cuspid; the lateral incisor was almost gumless, its free-

margin having been badly worn by pressure from a small metal clasp attached to the plate made by the dentist who had treated the patient before she came to me. Pressure on the gum caused pus to ooze out about the neck of the tooth. In the position of the central incisor her permanent cuspid had erupted.

January 6 I began an operation by extracting both roots of the left first bicuspid, and, after having enlarged the alveolus, I implanted in it a bicuspid extracted three days previously from a child for the purpose of regulation. January 29, in presence of about thirty colleagues who came to honor me with their assistance, I extracted the permanent cuspid, the lateral incisor, and the temporary cuspid. I enlarged the alveolus of the temporary cuspid and reimplanted in its right place the patient's permanent cuspid, after removing the pulp and filling its chamber and canal. I enlarged also the alveolus of the lateral incisor, and implanted a lateral incisor with decalcified root. The alveolus left by the permanent cuspid pointed obliquely from top to bottom and from outward to inward. I made this alveolus vertical, and implanted in it a central incisor with decalcified root. These two incisors were removed from a patient suffering from pyorrhea alveolaris. A ligature of platinum wire solidly held the teeth in their place while the work of consolidation between them and the bone was progressing.

During the operation I made numerous injections of cocain, in consequence of which the patient did not suffer throughout the formation of the new alveoli in the bone. The results have been most favorable. The patient went next day, as usual, to her work. She had neither pain nor inflammation, a clear proof that the operation had been performed with strict antisepsis. I had to tighten the ligatures from time to time, and at the end of three months I removed them altogether.

"NARCOSIS AND FORCED RESPIRATION," by Dr. C. S. Butler, Buffalo, read before the Union Convention of the 6th, 7th and 8th District Dental Societies, at Binghamton, October. 1895. He said that nitrous oxid should never be administered unless the nose was left free for the admission of air, and this requirement is equally true for other anesthetics. The whole process of anesthesia is simply an assault upon the functions of vitality, and the

operator can never know positively when the line of safety may be passed. In 1847 the action of anesthetics was described as first affecting the cerebrum, overcoming consciousness and intelligence, then the cerebrum and the spinal cord, so preventing involuntary movement, and last the medulla oblongata, stopping the action of the lungs and heart. The points here laid down have not been changed, except that later physiologists hold that the sympathetic system plays a more important part in anesthesia than was first thought. Anstie, he thought it was, said the sympathetic system was the first to be affected by and the last to be overcome by the anesthetic used. Now with these general observations we are all prepared to realize that there is always a possibility of danger, and that we should always be prepared with every facility and remedy to overcome the dangerous symptoms when they appear. And we know that all remedies fail sometimes. Forced respiration as a resort in desperate cases has caused much discussion, and only within the last two years the celebrated Marshall Hall said that it should never be resorted to, but in the light of recent occurrences physicians are now beginning to realize its value and importance. His own personal experience has shown its value, and he would be glad to impress it upon all. He believed there were many cases where death might be averted by its use, and showed the apparatus and manner of working it.

"SOME PRACTICAL POINTS IN PORCELAIN WORK," by Dr. A. C. McAlpin, Warren, Pa., read before the same societies. A conspicuous and radical fault found in porcelain operations is the carelessness with which colors are selected, the universal tendency being to choose too light and too yellow shades. The operator, disregarding the habits of his patient with regard to his teeth, selects porcelain facings and fillings to match the newly polished or dry teeth, when oftentimes he well knows that the patient will allow the teeth to lapse into the old condition, and that the porcelain will not gather a like deposit with the natural teeth. A highly glazed porcelain facing on a crown should rarely be left. It may be remedied by deadening the surface with sand-paper disks and polishing with buff and pumice. In porcelain fillings the color of the cement used as the retaining medium influences the shade, and should be carefully selected.

The operator in porcelain work should abandon small approximal fillings, and confine himself to labial fillings, conspicuous corners, and tips on teeth eroded or worn to cup shape. A porcelain filling involves the preparation of the cavity in such a way that the matrix can be easily withdrawn, without affecting its shape, and the completed filling can be inserted. Very acute marginal angles in the fillings should be avoided.

The use of separators enters largely in the successful insertion of approximal fillings and simplifies an operation when many times it would seem impossible to insert the filling with a sufficient body to it for anchorage. To form a porcelain filling, take platinum plate of a gauge as thin as it is possible to use without tearing, anneal it to white heat, cool and place it over the cavity, forming a matrix by pressing it to the walls with cotton pellets, rolled hard, rubber points and burnishers, and getting the matrix well defined by burnishing it to the marginal lines and over the surface of the tooth around the cavity, the latter to stiffen the matrix and facilitate handling. Then fill the matrix with porcelain body to match the natural tooth, and fuse. Remove the platinum, make slight retaining-grooves in the body of the filling with diamond disk, these grooves to abut as nearly as possible upon similar ones made in the side walls of the cavity. A mere scratch in the labial cavities will suffice. Then dry the cavity and filling, and insert with a thin mixture of cement, cover with sandarac, and allow to set well before removing the surplus cement. Extreme care should be taken that the marginal lines should be so perfect that subsequent grinding on them will be unnecessary. In filling cervico-labial cavities, pink porcelain body can be used to take the place of gum-tissue lost through recession. In large corners and tips, oftentimes short double-headed pins should be made and used, one head in the filling, the other as anchorage button in the cavity.

The operations next described are those in which porcelain work is most valuable. In these the jacket crown is used. Teeth that have been repeatedly filled with metals and have as often failed, can be restored to their natural appearance and use without disturbing the living pulp. When the natural crown has decayed beyond the metal filling, and the tooth is yet alive, or the crown is undeveloped, or is irregular in form, or twisted in its socket, or

slightly out of position, or worn away by friction or erosion, it can be crowned and regulated without sacrificing the pulp, and with a crown whose facing has the firmest attachments throughout its entire palatal surface, thus making the strongest porcelain-faced crown known. These crowns are so constructed that easy access to the pulp in direct line with the root-canal can be had in case of subsequent trouble. They are commonly used only on the twenty anterior teeth, as gold crowns are usually practicable for the molars. The crown is made as follows: Reduce the natural crown to a size which will admit of a No. 28, American gauge, platinum plate over the entire palatal and approximal surfaces, and a twenty-two gauge porcelain facing. Obliterate the cervical ridge, then fit the cervical circumference of the stub with a thirty-gauge platinum cylindrical tube (in making which, lap the metal ends a little); solder this with pure gold, using as little as possible, place the tube on the stub, mark it on a line with the palatal surfaces of the approximating teeth and gums, and grind the tube inside the lines with a dry stone, to such thinness that it can be burnished to the stub without affecting the cervical adaptation. Then solder to this surface, with pure gold (using as little as possible), a twenty-eight American gauge platinum plate, *this* to form the entire palatal and about half the approximal surfaces of the crown. Then mark and grind the labial surface of the tube and adapt to the stub by pressure, without burnishing. Use for this an old serrated amalgam plugger, that the ground surface may remain rough for the adhesion of the porcelain, then grind the back of the veneer facing so that, when placed on the shell, it will be in the position required when finished. Remove the shell from the stub, heat it to white heat, to cleanse and prevent carbonation, which might discolor the facing, and place the facing in the shell in correct position, with the porcelain body between, and dry well before baking. Bake to a slight gloss only on the porcelain body, cool slowly, and finish the same as in Richmond crown-work.

In attaching a bridge tooth to a jacket crown, allow the heavy palatal backing to extend across the space to be filled, roughen its labial surface with a dry stone, curl the edges slightly to stiffen them, and proceed with a facing as in the jacket crown.

For longer bridges the jacket minus the porcelain can be made,

but with pins attached to the labial surface, the bridge teeth soldered to them as in ordinary bridge-work. The facings can be put on the shells by the method explained, in the attaching of a cup facing. For replacing a lost facing from a bridge which is broken, burnish a thirty-two-gauge platinum plate to the bridge backing, with holes to allow pins to go through the plate, solder to this with pure gold (using as little gold as possible) two tubes of platinum made to fit closely over the pins. Attach to this the old facing or a duplicate, in the same manner as in attaching the facing to the jacket crown. Cement this on, and you have a permanent repair without the trouble of taking off the bridge.

To those aggressives who, with impunity, knock out the pulp and never lose from subsequent trouble more than the old original two per cent., this jacket crowning will seem superfluous; but to those meek and lowlys who advocate the preservation of the pulp whenever possible, and wish to be free from the two per cent. mortality, and at the same time wish to feel the satisfaction of doing better work, this method of crowning will commend itself.

Some other practical uses for porcelain work may be found in fusing pins or porcelain buttons on blocks, repairing cracked blocks, contouring teeth and portions of gum sections, making two blocks continuous, coloring teeth with mineral stains or bodies to match anomalous shades, painting gold fillings on artificial crowns, etc. In post crowns, perfect adaptation to the root with porcelain can be had by fastening the screw-post in the root first, and proceeding as in the attachments of a cup facing, making the entire crown, with the exception of the veneer facing, of the porcelain body.

British Journal of Dental Science for February, 1896.

"ORAL SURGERY," by Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S. Eng. *Treatment of Tumors of the Maxilla.* Innocent tumors, such as fibromata, enchondromata, and osteomata may, when small, be removed *from* the maxilla; when growing from the surface they may be cut off together with the piece of bone to which they are actually attached, or when growing from the antrum they may enucleated after opening that cavity freely. Large innocent tumors require removal *with* the whole or

a large portion of the maxilla. Malignant tumors nearly always necessitate removal of the entire maxilla, although occasionally the disease is sufficiently limited to enable the surgeon to spare the malar bone or the orbital plate. Thorough and complete removal of the tumor is necessary; no partial or piecemeal operation is permissible. Before attempting removal of the maxilla the surgeon should satisfy himself as far as possible as to the diagnostic points mentioned already. He must also determine whether the growth he has to deal with is one that can be removed with a fair prospect of success. No definite rules can be formulated, each case requiring separate consideration on its own merits. When the tumor is of many months duration, hard, well-defined, limited to the maxilla, and the skin over it freely movable, even though thinned from pressure or altered in color, it may be regarded as one favorable for removal. If, on the other hand, the growth of the tumor has been rapid, its consistency soft and ill-defined, its vascularity great, the skin over it involved and fixed, the orbit, nose, naso-pharynx or temporal region invaded, the submaxillary and cervical glands enlarged, the patient old, weak, or emaciated, the case must be considered unsuited for operative interference.

Complete Extirpation of the Maxilla.—Before the operation the face must be shaved and the mouth rendered as aseptic as possible. If time permits, carious teeth should be attended to and those covered with tartar carefully scaled; the mouth should be frequently rinsed with an antiseptic mouth wash and mopped out with a 1-in-4000 solution of biniodide of mercury immediately before the operation. If the patient is old or feeble it is advisable to administer an enema of hot brandy and water. The administration of chloroform (the only suitable anæsthetic for the operation) must be entrusted to an assistant who is thoroughly reliable and accustomed to operations involving the mouth. When the patient is under the influence of the anæsthetic the surgeon makes a complete examination of the growth to ascertain its extent and attachment and to decide whether, owing to its vascularity, it is desirable to perform a preliminary laryngotomy and plug the pharynx. An incision is then made through the center of the upper lip, round the ala and along the side of the nose as far as the inner canthus of the eye, and then out-

wards as far as the malar prominence. This incision has the advantage of dividing the branches of the facial nerve and artery near their terminations, and of leaving a much less conspicuous scar than other incisions which have been recommended. The plat thus marked out is rapidly deflected and the hemorrhage, which is often very free, arrested with pressure forceps. The ala of the nose is then detached from the long margin and the periosteum raised from the floor of the orbit. With a saw a deep groove is cut in front of the attachment of the masseter muscle, partially severing the maxilla from the malar bone; the saw-cut should come opposite the sphenomaxillary fissure. The nasal process of the maxilla is then partially divided in the same way. The central incisor on the diseased side is next extracted and a narrow-bladed saw inserted into the nostril; the hard palate is sawn nearly through, care being taken not to damage the soft palate. The mouth is then opened widely with a gag and the soft palate detached from the margin of the hard with a scalpel, so that when the maxilla is removed the soft palate remains behind. The maxilla is now completely severed from its long attachments by means of strong-cutting bone forceps introduced into the saw cuts previously made. The loosened bone is next seized with powerful lion forceps and twisted from side to side, whilst its remaining attachments to soft parts are torn through with the finger or severed with a knife. The bleeding at this stage is seldom serious, as the branches of the internal maxillary artery are small where they enter the maxilla and have been mostly torn across rather than cleanly cut; it can usually be arrested by sponge pressure, but any vessel which can be seen bleeding should be tied. The sphenomaxillary fossa and the cavity of the nose are then examined and any further portions of growth left behind are removed by knife, scissors, or sharp spoon. If the surgeon has any doubt as to the complete removal of the disease, chloride of zinc paste should be applied to the suspicious places on the end of a strip of lint and covered with a pledget of wool dusted with iodoform to prevent the escape of the drug into the mouth. If the growth has been completely and satisfactorily removed the wound should not be packed, but should be painted over with a solution of iodoform in ether; but if there is any oozing going on after all visible bleeding vessels have been secured, the wound

should be plugged with strips of iodoform gauze. The flap having been brought into position is fixed by a number of interrupted sutures of fishing gut, taking particular care to adjust the red margin of the lip very accurately; hare-lip pins may be used if necessary, but are better dispensed with. The wound is dusted over with iodoform and covered with a gauze dressing.

When the patient has recovered from the anæsthetic he should be well propped up in bed to facilitate the escape of discharges. Any plugs that may have been inserted should be removed within 24 hours, and the parts well syringed with weak Condyl's fluid and painted over with solution of iodoform in ether; the patient should rinse his mouth frequently if he is able to do so, especially after taking food, so that everything likely to favor the growth of bacteria may be as far as possible removed. He must be fed at frequent intervals with small quantities of milk and beef-tea administered in a teaspoon if he can swallow, or by the nasal tube if deglutition is difficult or impossible. The administration of stimulants will depend upon the general condition of the patient. When the parts are soundly healed the gap in the roof of the mouth must be filled up with a properly adapted obturator and artificial denture.

Result of the Operation. Speaking generally, the results of excision of the maxilla are not satisfactory; the mortality directly due to the operation is about 30 per cent., and only about one patient in every sixteen operated on for malignant disease makes a permanent recovery. This sad result is chiefly due to the operation being too long deferred, owing either to inaccuracy of diagnosis or to an unwillingness on the part of the patient to submit to surgical treatment. The causes of death after the operation may be thus summarized:—(a) Hæmorrhage may prove fatal at the time of operation, either by inducing syncope or by obstructing respiration. Secondary hæmorrhage may occur whilst the sloughs are separating; if slight in amount it may be arrested by sucking ice, or by plugging the wound with strips of antiseptic gauze; should these measures fail the wound must be opened up and the bleeding vessel secured *in situ*; as a last resort it may be necessary to tie the external carotid artery. (b) The shock of the operation is always severe, in some cases fatal. Prolonged and severe shock should be treated by the application of warmth, and the administration of brandy per rectum and ether

subcutaneously. (c) Cellulitis and erysipelas are apt to occur when the patient is old or broken down in health from visceral disease, chronic alcoholism, etc. These conditions demand the local use of antiseptics, scarification or incision of the swollen tissues, and a liberal supply of stimulants. (d) Meningitis may result from extension of septic inflammation through the foramina at the base of the skull; practically nothing can be done to ward off the fatal result. (e) Septic broncho-pneumonia is one of the most frequent causes of death; it is due to inhalation of septic matter from the mouth. The importance of rendering the mouth aseptic prior to the operation, and of keeping it so afterwards, has already been insisted on. (f) In many cases recurrence of the disease takes place even before the wound has healed, and as already stated the number of cases which permanently remain free from recurrence is very small.

Partial Excision of the Maxilla. In some cases of innocent tumor of the maxilla it is possible to remove the whole disease without sacrificing the entire maxilla. In some cases the orbital plate may be preserved. In such the skin incision may be limited to the upper lip and the side of the nose, and the bone may be divided below the margin of the orbit by saw or chisel. The preservation of the orbital plate is a great advantage to the patient, since when it is removed there is serious disfigurement of the face, much œdema of the lower eyelid, and the eye itself may lapse into an unhealthy condition, and eventually be destroyed. When the orbital and nasal portions of the maxilla are involved, and the palate sound, the latter may be preserved. The malar and nasal processes having been sawn through, a horizontal saw-cut is made above the alveolar process from the nose outwards towards the malar incision, and the piece of bone thus isolated prized out with a chisel or elevator, or wrenched away with lion forceps.

The Dental Practitioner and Advertiser for January, 1896.

"DIAGNOSIS OF PYORRHOEA ALVEOLARIS," by F. L. Sibley, D. D. S., Rochester; read before the Union Convention of the 6th, 7th, and 8th District Dental Societies of N. Y. State, at Binghamton, Oct., 1895. The term pyorrhœa alveolaris is like the fabled "cloak of religion"—it covers a multitude of sins. Any disease whereby pus exudes from the sockets of the teeth may be called pyorrhœa alveolaris.

I recognize two different systemic conditions in pyorrhœa, and term them, for my own convenience, salivary and lithæmic pyorrhœa. One seems as fatal to the teeth as the other. Salivary pyorrhœa is, as the name indicates, due to the deposition of salivary calculus on the necks of the teeth. Usually the first to suffer are the lower incisors, they being in the direct path of the saliva, as it is poured into the mouth. Whether this is a constitutional condition, or the calculus is precipitated by some condition of the fluids of the oral cavity, I am not, at this time, prepared to state. However, the recession of the gums, the absorption of the process, and final loss of the teeth is the result. The calculus is alkaline, and hence can have no connection with the uric acid diathesis.

Lithæmic pyorrhœa is produced where the deposition of serumal calculus is on the roots of the teeth, below the free margin of the gums. The term serumal indicates it as coming from the blood. I believe it to be principally composed of uric acid and oxalate of lime. In this condition the molars are usually the first to suffer, the others being lost in succession. The calculus, as I have stated before, is deposited under the free margin of the gums, near the apices of the roots, its presence causing the absorption of the process, and suppuration of the soft tissues, with loss of the teeth. In a large percentage of these cases you will find that it is hereditary, and I have often noticed it is from the paternal side of the family. In diagnosis, the urine is the factor in determining the lithæmic condition. The urine, when passed, is clear, but upon cooling to the temperature of fifty or sixty degrees Fahrenheit, it becomes cloudy, and in some instances throws down a pinkish deposit, which consists of free urates. On heating or being treated with alkalis, it clears up. This may occur in a perfectly healthy subject, after a heavy dinner at night, with wines, etc., but can only be regarded as a symptom, when persistent without errors of diet. You will find some persons affected at the age of thirty, others at forty, still others at sixty. Of course the earlier the time at which it appears, the stronger you will infer the hereditary disposition to be, and the more obstinate, probably, will be its tendency to persist. The resulting condition in the oral cavity is pyorrhœa, due to the gouty diathesis.

I have described two different conditions that are termed

pyorrhœa, but the generally accepted constitutional treatment applies only to one, and that the lithæmic pyorrhœa. As the majority of the cases presenting themselves to us are salivary and alkaline in character, if we prescribe the generally accepted constitutional treatment of pyorrhœa, the result is obvious. We have simply added fuel to the fire.

Zahnärztliche Rundschau for January, 1896.

"PREPARING ROOTS FOR CROWN AND BRIDGE WORK," By Dr. C. Kline, Schwerin, Germany. Translated by Dr. B. J. Cigrand. Up to the present time it was the method to cleanse the root-canal as much as possible and subsequently disinfect the same. How possible, and how often has it happened through drilling, that small particles of the debris or decay have been forced through the apical foramen, and what is the result? Hyperaemia, periostitis, and finally, extraction.

Dr. Evans gives the following, relative to preparing the roots prior to crowning: "1st, cleanse the canal; 2d, sterilize the same." But I contend, as does Dr. Hamecher, that roots have received proper antiseptic preparation only when the contents of the canal have first been sterilized and subsequently removed. Dr. Schrier had the same view of the matter and introduced—on account of the tediousness of the old methods of antisepticising—his kalium-natrium. By the employment of this remedy there results a saponacity of the contents of the canal and perfect sterilization is attained, although this method is accompanied with too many unpleasant features, which under certain circumstances might lead to danger.

Dr. Hamecher has introduced a remedy which attains the same results, namely, saponacity of the contents of the canal, without entailing the disagreeable accompaniments of kalium-natrium. His drug or medicine is kalium-hydricum. To ascertain the workings of kalium-hydricum to a certainty I have, in my position as assistant at the Dresden Institute of Dentistry, numerous opportunities and can positively assert that, in my opinion, there can be no safer remedy for sterilizing root-canals than kalium-hydricum. Only through the employment of this remedy have we reached excellent results. Roots which had for ten years remained in the maxilla, fully imbedded in the gums, were, after

three days treatment, mounted by crowns which gave perfect satisfaction and good service; others which had appended to them chronic ulcers received crowns after eight days treatment. In short, so long as the root was of sufficient length and soundness, and solid in the jaw, good results were obtained by the use of the kalium-hydricum, and the roots thus crowned were serviceable. Many in the profession will with reluctance believe what I here assert, and will be inclined to treat my remarks distrustfully; but those who wish to learn more of the remedy can procure literature on the subject by communicating with Dr. Hamecher, who will gladly provide them with further information.

SUGAR AND THE TEETH.—Dr. Vaughan Harley read a paper at the British Medical Association, in the Physiology Section, upon "Sugar as a Food." In addition to praising its virtues, the author combats some of the vices ascribed to sugar. He says that the popular view as to sugar ruining the teeth is not borne out by observation, and that people accustomed to take large quantities are not more liable to bad teeth, but, on the contrary, have in many cases exceptionally fine ones. He quotes the case of the negroes of the West Indies, who are in the habit of taking large quantities of sugar.—*Brit. Jour. Dent. Sc.*

STRANGE CASE OF DEGENERATING HUMAN BODY.—A medical case of the greatest interest was presented to a clinic at the New York College of Dentistry last week, when Dr. F. D. Weise, one of the medical staff, introduced John M. Molanski, who is suffering from what is known in medical science as acromygalia. It is regarded as one of the rarest and most mysterious diseases to which human kind is subject.

Medical authorities differ as to the exact nature of the disease, some believing that it is not really a disease, but a form of physical atavism, or a tendency to return to the original species, or a reversion to the primary type of man.

Molanski is undergoing a bodily metamorphosis. His face is gradually being transformed from its natural appearance into a strong animal type, with protruding under jaw and overhanging brows, which a heavy beard and head of hair but partially conceal. His hands and feet are growing larger and larger, and are already taking on the appearance of those of a monkey. He suffers no personal inconvenience, and is daily engaged in his business of cracker manufacturer, at No. 23 Cherry street. His disease, if it may be so called, is not contagious, being only a state of retrogression. It is not more than nine years ago that acromygalia first made its appearance and was recognized. There are only twenty cases on record, and that of Molanski is the only one now known to be in existence.—*N. Y. Herald.*

Letters.

THE FEELING IN NEBRASKA.

OMAHA, Jan. 15, 1896.

Dr. J. N. Crouse, Chicago,

DEAR DOCTOR:—At the last meeting of the Omaha Odontological Society I was instructed to write you of the following action which was taken by us:

Resolved, That the secretary of this society be instructed to express to Dr. Crouse our appreciation of his services to the dental profession in his untiring efforts as the head of the Dental Protective Association, and that as a society we are fully in sympathy with him in this noble work, and that we pledge him our support as suggested by him in a circular note addressed to the members of the Protective Ass'n.

The above resolution was unanimously adopted by the society.

Yours truly,

W. N. DORWARD, Sec'y.

SALIVARY CALCULUS AND ITS TREATMENT.

CHICAGO, March 20, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—In the December number of the DIGEST we had a very interesting article from Dr. Geo. H. Cushing, under the head of "A Blot on the Profession." The subject of Salivary Calculus and its treatment with relation to diseases in the mouth has not received the attention for the last forty years its importance deserves. In that time we have had once in a great while a paper similar to Dr. Cushing's on the subject from men as thoroughly qualified to speak authoritatively on it. Experience and observation seem to prove that as many teeth are lost from calcareous deposits on the teeth as from decay, and yet, strange as it may seem, the matter has received scant attention. Notwithstanding we profess to be a progressive profession, when we come to consider the importance of this question are we not inconsistent? The object of this brief letter is to suggest some ways or means

by which interest in the profession can be aroused and vigorous treatment of the subject brought before the profession at large through our national, state and local dental societies, as well as through the dental journals. It seems to us that the American Dental Association should take the initiative in this work, formulate methods of treatment for this condition, and then communicate with the various local societies throughout the country.

Finally, the profession might just as well understand that this matter is going to be agitated and emphasized until something shall have been accomplished, looking to the universal treatment of this question, commensurate with its importance.

Yours truly,

J. AUSTIN DUNN.

NEW YORK LETTER.

NEW YORK, March 21, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—March—yes New York is marching on. Somewhat stormy, according to the *New York Tribune*.

Some colleges have claimed that they were the only ones that taught the American system, yet right in the face of this Mr. Tomes, of London, has testified in the courts that "there is no system that is not common to all dentists."

Dr. M. Smith gave an article to the First District Society this month on, "How we can Improve our Local Societies," and so much interest was taken in it, and so much said, that it is useless to discuss it, but they voted to print it for distribution and much is anticipated from it.

The clinics of the Odontological, held from four to six P. M. the first Tuesday in each month, at the Society rooms, being of a "high order," are already a pronounced success. A generous contribution of chairs, instruments and materials, is forthcoming from the members and dealers. This Society has gotten on a foundation that will insure for it a decided success and precedence. Its cabinet is fast becoming an object of great attraction, and it will increase rather than diminish. There is no reason why it cannot become the headquarters of dental interest in our city. At the last meeting the Society voted to call their clinics "The Dwinelle Clinics."

Dr. Gaylord, of Conn., and Dr. Hull, of Mass., gave a demonstration of the acid treatment outlined by Dr. Hull in the February DIGEST, which was of more than ordinary interest. Two cases of surgery that had been operated on for necrosis were exhibited by Dr. Cady. The fine new chair and full equipment of all electrical attachments, and the solid oak cabinet, emphasize the thought that the clinic is an established fact for the future. Dr. Rhein's paper classifying the phases of Pyorrhea was, in our opinion, the best that has been given, and we may say the first time it has been done. The paper will be decidedly instructive; his record of cases under the classified head proves this.

The changing of the published proceedings of the Society is far from being acceptable to some of the members.

Nothing has so stirred the dental profession in a long time as Dr. Williams' London letter in the March *Cosmos*. The next move by Messrs. Heitzman, Abbott and Boedecker, which is naturally expected from them, has put all on the *qui vive*. Dr. Williams expresses great satisfaction that has come of waiting even ten years for his claimed vindication. "Enamel has no organized material," hence, "no structure." Will the Damascus blades be whetted and brought out?

Cordially,

NEW YORK.

BALSAMO DEL DESERTO.—In case it should become too stiff to work easily, soften it by heat over a water-bath, add from 5 to 10 drops of oil of cinnamon, and mix thoroughly.—*W. H. White*.

CAMPHOR FOR ETHER COLLAPSE.—Schilling affirms that hypodermic injections of camphor in larger doses than the text-books advise are beneficial in ether collapse. Half-grain doses are very effective, but the results obtained from one-grain doses are extremely gratifying. The solution should be one part camphor to ten parts olive oil. As the camphor is eliminated within two hours it has no cumulative effect.—*Munch. med. Woch.*

THE SIZE OF A CHEMICAL ATOM.—Recent calculations of Sir William Thompson go to show that the average size of a chemical atom is not less than six and not greater than sixty billionths of a cubic inch, and that in a cubic inch of air there are 300 quintillions of atoms. Hence the cubic inch of air is by no means full, and it is possible for them to move 18 miles a minute and collide against each other, as it is estimated they actually do, 8,500,000 times a second.—*Four. of Brit. Dent. Ass'n.*

The Dental Digest.

PUBLISHED THE

TWENTIETH DAY OF EVERY MONTH.

Editorial.

GREAT VICTORY—THE LOW BRIDGE SUIT WON BY THE DENTAL PROTECTIVE ASSOCIATION.

Never since the day when the Goodyear Dental Vulcanite patent expired have dentists had such cause for congratulation and rejoicing. We have had the privilege of reporting from time to time through letters, circulars, and journal articles, a succession of victories for the Dental Protective Association in all suits undertaken in the United States Supreme court, and all the lower courts in various parts of the country, and every suit has been won. But no suit undertaken has ranked in importance with the one just decided. Consequently, active preparations for the defense of this suit have been in progress for eight years; a vast amount of correspondence has been conducted; weeks of time each year have been consumed in the taking of testimony; and not a day has been free from care and anxiety concerning it on the part of those in charge. Nothing has been left undone which could possibly be of advantage in the trial. Hence the relief and satisfaction that a decision has been reached and that right has triumphed.

All honor to the able attorneys who have worked so indefatigably in our behalf, and to the members of the Protective Association who have given their sympathy, co-operation and aid, even when it seemed as if victory must surely perch on the banners of our opponents.

The one obstacle which has given us the greatest amount of trouble during all the protection of the members was, that the Crown Co. had obtained a decision which declared the Low Bridge patent valid, before the organization of the Protective Association

This enabled them to force licensees to agree to recognize the validity of all of their patents—some forty or fifty in number—on which no decision had ever been rendered, and helped them in other ways to intimidate and secure royalty from many members of the profession. In fact, their having obtained the decision favorable to the Low Bridge patent has been their main bulwark of strength. And this company positively refused to have another trial to test the validity of their patent in any federal circuit except the one in which their patent had been declared valid. Hence we were handicapped from the outset, and hence the greater the victory. We met them on their own ground and won, the suit being dismissed by U. S. Judge Hoyt H. Wheeler, of Vermont, before whom the case was argued at New York City, January 14th to 17th last. Members of the Dental Protective Association—and those who should be members—it is time for hand-shaking and congratulations.

DOES THE DECISION ON THE LOW BRIDGE PATENT END THE LITIGATION OF THE DENTAL PROTECTIVE ASSOCIATION AS TO THIS PATENT?

In answer to this question we answer most emphatically, No! Already the Crown Co. are preparing for appeal to the Federal Court of Appeals. But it makes all the difference in the world which is the under dog in the fight.

Having obtained a reversal of the former decision we now meet them in the appeal on an even footing. If the former decision had been sustained we would have been obliged to make the appeal, and to have borne the accompanying extra expense which they now have to bear, and to have urged our case with two decisions sustaining the claims of our opponents against us.

Never was the motto of our journal so significant—"Freedom and Progress Come from Union of Action." Without the Dental Protective Association, which is made up of the best men in the profession, we should to-day be helpless in the hands of a great monopoly, and the prey of a horde of patent claimants who have been held so completely at bay that the rank and file of the profession are not even aware of their existence and illegal designs.

We have already described somewhat in detail the numerous patent claimants, besides the International Tooth Crown Co., that would be extorting royalty in large amounts from members of the profession, except for the barrier the Protective Association is against them, and therefore will not go farther into details at this time. Suffice it to say, that the Crown Co. are not out of the way by any means, but are preparing to appeal this suit which we have just won, and to break up the Protective Association if they possibly can. There are many other patent claimants who are just waiting for the Association to go to pieces before they saddle their claims upon the profession. Therefore, it certainly behooves the membership to get those outside the Association into it. New members are coming in all the time, but every reputable dentist in the country should belong. Will you do your share to accomplish that result?

Notices.

A DAY'S CLINIC IN OMAHA.

The Omaha Odontological Society and the Dental Department of the University of Omaha will give a day's clinic on April 2, 1896, to be followed by the Commencement Exercises and Banquet in the evening. Operations will be performed by the leading operators of Omaha and surrounding cities.

GEORGE NASON,
W. N. DORWARD, Sec'y.
J. H. IRVINE, Treas.

Committee.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-second annual meeting of this society will be held in the Senate Chamber, Springfield, Ill., May 12—15, 1896. The executive committee has been especially fortunate in preparing a very interesting program. No member can afford to be absent. Dentists practicing in the state are cordially invited to attend and to become members of the society if possible. The profession outside of the state is always welcome at these meetings. The hotels and railroads have granted the usual reduction. Pay full fare in coming and take receipt therefor, this, when countersigned by the secretary, entitles the holder to return at one-third the usual fare.

LOUIS OTTOFY, Secretary,
Masonic Temple, Chicago.

PHILADELPHIA DENTAL COLLEGE COMMENCEMENT.

The thirty-third annual commencement of the Philadelphia Dental College was held in the Academy of Music, Philadelphia, March 5, 1896. The order of exercises was as follows: *Introductory Selections*; Prayer, Rev. James Crawford, D. D.; *Overture*; Conferring Degrees; *Graduation Grand March*; Address to Graduates, Prof. S. B. Howell; *Music*; Valedictory, Dr. Chas. N. White; *Music*; Benediction; *Finale*. There were 112 graduates.

HARVARD ODONTOLOGICAL SOCIETY.

At the annual meeting of this society, held Feb. 29, 1896, the following officers were elected: Pres., Waldo E. Boardman, D. M. D.; Rec. Sec'y., Jas. T. Paul, D. M. D.; Cor. Sec'y., Edward B. Hitchcock, D. M. D.; Treas., Dwight M. Clapp, D. M. D.; Editor, Henry L. Upham, D. M. D.; Executive Com., Jos. T. Paul, D. M. D.; Frank T. Taylor, D. M. D.; Wm. P. Cooke, D. M. D. Com. on Clinics, J. G. W. Werner, D. M. D.; Wm. P. Cooke, D. M. D.; Arthur H. Stoddard, D. M. D.

NORTHERN IOWA DENTAL SOCIETY.

This society was organized at Clear Lake, Iowa, Sept. 3, 1895, with Dr. Wm. H. Steele, Pres., Dr. J. J. Grout, Vice Pres; and a three days meeting was held. The next meeting will be at Spirit Lake, Iowa, Sept. 1-3, 1896, and the profession are cordially invited to attend. The present officers are: Dr. E. D. Brower, Pres.; Dr. J. J. Grout, Vice-Pres.; Dr. A. N. Ferris, Treas.; Dr. Geo. H. Belding, Sec'y. Executive Com., Dr. W. T. Knapp, Dr. C. J. Peterson, Dr. F. J. Gallagher.

TENNESSEE DENTAL ASSOCIATION.

The following are the officers of this association: Pres., Dr. D. B. Brabson. Knoxville; Sec'y., Dr. P. D. Houston, Lewisburg; Executive Com., Drs. J. Y. Crawford, D. R. Stubblefield, and J. A. Dale, all of Nashville. The next meeting will begin on May 5, 1896, at Nashville. Dentists from all parts of the country are invited to attend.

News Summary.

Dr. C. R. Taylor, of Streator, Ill., was in Chicago about two weeks ago.

ANOTHER BACILLUS IN THE MOUTH.—M. Gembert has read a paper at a meeting of the Therapeutical Society in Paris, in which he stated that the *Bacillus Coli* has been found in the mouth of healthy persons. In sixty such cases the organism was found in twenty-seven. Thirty-six experiments were made to ascertain the chief locality in which the bacilli may be found, and in more than half the tonsil appeared to be the seat.—*Brit. Jour. Dent. Sc.*

FOR SALE. Dental office, located for eleven years on the busiest corner of the West side. Will sell cheap. For particulars call or address, Dentist, 306 New Era Building, Harrison St. & Blue Island Ave., Chicago.

FOR SALE. Second hand *Gas Outfit*. "Long" pattern, with full cylinder of 100 gals. gas, silk-covered tubing, and double-valve inflatable rim mouth-piece. The outfit is nicely japanned and as good as new. Will sell complete for \$45.00. Address Dental Protective Supply Co., 1101 Champlain Bldg., Chicago.

A NEW SUBSTANCE.—"Viscose" is a new industrial substance which is being manufactured by a syndicate at Erith. It is a species of fireproof celluloid, which can, it is claimed, be manufactured with almost any degree of resistance, varying from that of ivory, ebony or horn to almost that of indiarubber. The process of manufacture is said to be comparatively inexpensive with that employed for the ordinary celluloid, whilst the raw stock, consisting mainly of waste products, conduces still further to economy of production.—*Invention.*

ARISTOL AND CHLOROFORM.—Aristol dissolved with chloroform, making a paste about the consistency of syrup, is very efficient to stop toothache from an inflamed or exposed pulp, and to seal a cavity under treatment. When applying nitrate of silver to spots where decay has exposed sensitive dentine, it can be covered and kept from contact with the mucous membrane for several hours by this aristol paste applied with a little spunk. When the dam is once on the tooth it can be held there with a very little paste and spunk, and secured even better than with sandarac varnish. Try it and thus avoid the too frequent use of clamps and ligatures. C.

UP TO DATE.—[This is sent us by a reader.] A patient recently told us a good one on her old family dentist in the little town of . . . The old man had for a long time conducted an "I-had-fifteen-teeth-drawn-there" sort of office to his own entire satisfaction and profit, but at last trouble came to him in the shape of an educated young graduate, who by good work was getting all the old man's patients, so something had to be done. After much deliberation he hit upon a scheme and caused it to be announced in the local papers that "Dr.— would leave for an extended trip among the various dental schools in the country to thoroughly post himself in the *very latest* of dental science and knowledge." About a week later he edified the natives with a new sign of huge dimensions and having much blue enamel and gold leaf, which bore, in large letters, the legend, "TEETH EXTRACTED WITHOUT PAIN!"

FOUR HUNDRED (\$400) DOLLARS IN PRIZES.

The special attention of our readers is called to the advertisement of the Palisade Manufacturing Co., with the above title, on page 20 of this issue.

The prize contest which this well known firm announces will no doubt attract a great deal of attention and result in the submission of many articles of merit on "Germicides and Antiseptics in Dentistry." The prizes are extremely liberal, and the well known professional and literary eminence of Dr. Geo. S.

Allan, of New York, who has kindly consented to act as judge, is a sufficient guarantee of the impartiality to be observed in the awarding of the prizes.

We are assured that there is absolutely "no string" attached to the provisions of this contest, and any dentist in good standing in the community is invited to compete on equal terms with every other competitor.

Further particulars as to conditions, etc., can be obtained by addressing the above named firm.

SIN IS PINK, NOT SCARLET.—Dr. Elmer Gates, formerly with the bureau of ethnology of the Smithsonian Institute, has concluded, after experimenting, that scarlet is not the distinctive color of sin, and that the Bible expression, "though your sins be as scarlet," is simply a rhetorical exaggeration. Dr. Gates has found in his study of the brain that each definite emotion produces chemical products in the secretions and excretions which are characteristic of these emotions. For example, the evil emotions produce a poisonous product, while happy emotions produce life-promoting compounds. In other words, every emotional experience creates brain structure, the refunctioning of which reproduces its characteristic good and bad chemical products. For instance, he found the perspiration to contain different volative organic compounds under the influence of different emotions. These products may be detected by chemical analysis in the perspiration of an individual, and Dr. Gates has discovered about forty of the bad and as many of the good. Of the chemical products that of guilt is the worst. If a small quantity of the perspiration of a person suffering from conscious guilt be placed in a glass tube and exposed to contact with selenic acid it will turn pink. No other poison, similarly generated, exhibits the same phenomenon. Therefore, pink is apparently the characteristic color of sin, not scarlet.—*Philadelphia Press*.

NICOTINE.—Nicotine is fatal to a large number of the microbes that cause some of our most serious sicknesses. In our issue of February 23rd, 1889, says *Chambers' Journal*, we noticed the results of investigations on this head by an Italian professor, Dr. Vincenzo Tassinari, and the results of the intended further experiments therein alluded to have recently appeared in the *Italia Termale*. He finds that:

- (1) The smoke of Cavour, Virginia, and Tuscan cigars, and all black and chopped tobaccos, possess a very pronounced bactericidal power, especially against the bacillus of Asiatic cholera.
- (2) This microbicidal action may in all probability be attributed to the products of nicotine.
- (3) In epidemics of cholera and typhus the use of tobacco may be rather useful than hurtful.
- (4) Tobacco-smoke merits special consideration on the hygiene of the mouth as a prophylactic means of combating microbial affections of the buccal cavity.

Non-smokers have hitherto fumed, and declared
That the succus of "baccy" will kill us;
But what say they now Tassinari has proved
That the sucking it slays the bacillus?

MICRO-ORGANISMS IN THE HEALTHY NOSE.—Among the interesting facts we owe to bacteriology is the discovery that so-called healthy persons are the lodging places of myriads of bacteria, powdering their skins, dwelling in the cavities and orifices of the body, mouth, nose, throat, intestines, etc. It is calculated that 500 litres of air, bearing on a low average 1,500 bacteria, are inspired every hour. These microbes of the healthy nose have been investigated by Hajek, Lowenberg, Frankel, von Besser, Paulsen, St. Clair, Thomson and Hewlett, among others. The latter authors arrive at the following conclusions: 1, the vestibule is lined with skin furnished with hairs and with sudoriferous and sebaceous glands, and is not part of the nose cavity proper—only leading to it; hence in bacteriologic examinations of the nasal fossæ a distinction must be made between the vestibule and the mucous cavity proper; 2, contamination from the lining of the vestibule is difficult to avoid, even when this source of error is realized; 3, in the dust and crusts of mucus among the vibrissæ of healthy subjects micro-organisms are never absent—as a rule they are abundant; 4, on the Schneiderian membrane the reverse is the case, since in over 80 per cent. of the cases no organisms whatever were found and the mucus was completely sterile; 5, the occurrence of pathogenic organisms on the Schneiderian membrane is quite exceptional. While the number of individual cases in these researches is hardly large enough to be conclusive, still, if they are corroborated, it would seem that all microbes of inspired air are arrested either by the moist surface and the vibrissæ of the vestibule, or that, as has been already claimed by Wurtz and Lermoyez, the nasal mucus is germicidal. —*American Microscopical Journal.*

Obituary.

IN MEMORIAM.

In view of the sudden death of Mr. S. R. Bingham, of this city, we, the members of the Chicago Dental Society, desire in our appreciation of his many excellent qualities to place on our records the following Memorial.

Though not a member of the profession, yet he was so intimately associated with its members in a business capacity, and was so greatly endeared to many of them by long and loving association, that it seems most fitting that this Society should express the sense of its great loss and convey to his family its profound sympathy in their hour of terrible bereavement.

The deceased has been the representative of the S. S. White Dental Manufacturing Co. in this city for nearly forty years, and most members of the profession have met him frequently and almost daily, for a greater or less portion of that period, and some have had the high privilege of his friendship during the entire time of his sojourn here.

It would be hard to find a man of purer mind, of a sweeter, lovelier nature, of greater integrity, of broader sympathies, or of more loyal friendship than he. He was, in a word, an example of the highest type of a true Christian, in the broadest sense of that term.

To those who have known him intimately the sense of personal loss in his going from among us is very keen; while all who have known him at all must feel that an elevating influence has been taken away from our midst.

Very appropriately may be quoted of him what he wrote on the fly-leaf of a copy of his Memorial to Samuel S. White and James W. White, when presenting it to a friend: "Who knew both these and is the better for it." And no more fitting words could be said concerning him than the closing sentence of the Memorial above referred to:—"He showed us how to live. Let us follow on in a like faithful service of our fellows, our country, and our God, until with him we enter upon a loftier service, in the broader fields, and under the fairer skies, of the Eternal home."

W. A. STEVENS,
C. N. JOHNSON,
GEO. H. CUSHING,
Committee.

RESOLUTIONS ON THE DEATH OF DR. JAMES E. GARRETSON.

WHEREAS, The profession has sustained a great loss in the death of James E. Garretson, M. D., D. D. S., Professor of Oral Surgery in the Philadelphia Dental College. Be it therefore

Resolved, That the Chicago Dental Society hereby expresses its full appreciation of the distinguished services as a member of the medical and dental professions, and as a practitioner, teacher, and author.

Professor Garretson placed the profession under lasting obligations for his invaluable labors in placing Oral Surgery upon a truly scientific basis.

He was, moreover, a man of wide knowledge and attainments in the field of general literature and philosophy, highly esteemed by his colleagues, beloved by his students, and honored by his fellows in the many scientific societies to which he belonged. His loss is well nigh irreparable.

Resolved, That this Society express to the college with which he was so long connected, and especially to his family and personal friends, our heartfelt sympathy in their bereavement.

Resolved, That an engrossed copy of these resolutions be sent to his family and the Faculty of the Philadelphia Dental College, and that they be published in the various dental journals, and also spread upon the minutes of this Society.

GEO. H. CUSHING,
GARRETT NEWKIRK,
TRUMAN W. BROPHY,
A. W. HARLAN,
J. N. CROUSE, } Committee.

The Dental Digest.

Vol. II.

CHICAGO, APRIL, 1896.

No. 4.

Original Contributions.

IMPROVED AMALGAM FILLINGS.

By S. B. PALMER, M. D. S., SYRACUSE, N. Y.

The November issue of the DENTAL DIGEST contains an article under the above heading, by Dr. M. L. Mannhardt, Berlin, Germany, which I think does not cover the ground intended by the writer. That is, Americans will not fully endorse the first sentence of the paper—"It is a well known fact that amalgam fillings do not prevent or arrest further decay."

I am not intending to criticise the paper, but will add to a valuable suggestion of the writer, that of lining cavities with tin under amalgam, and give scientific reasons for the benefits derived therefrom, consequently the first quotation will not be commented upon.

It is fair to state that there are two conditions of dentine, one might come under the statement, while the other would not. It is to be regretted that writers so often present but one phase of a subject.

It is well understood that the metallic salts furnished from amalgam enter into dentine, and with the organic portion of the tooth an insoluble compound lining is formed, which arrests further decay. The same principle renders tin better than gold for the teeth of children. Tin is better than amalgam because the stannic oxide is white and does not discolor dentine. Practice has taught that copper is an element in dental alloys which furnishes these properties more than silver and tin. If an amalgam could be made which would be as free from oxidation as gold, it would be no better than the latter, with any possible shrinkage against it.

Much has been written on shrinkage of amalgam. The most

potent cause has generally been left out. When a filling is ready for insertion it is composed of particles, shavings or filings, which are covered with mercury and soldered together into a mass. What is known as "setting" is the penetration of the mercury into the unamalgamated particles. When this process is completed, it may be in weeks or months, there still remains in the mass distinct elements composed of the portions not fully amalgamated and that which is the amalgam proper. This taking up mercury after fillings have been completed is one cause of shrinkage. Another is chemical action between the two portions of the plug. We do not find an amalgam plug bright on the surface in contact with dentine, unless a lining has been used to exclude moisture. There is moisture sufficient in any tooth while in the mouth to set up action between the elements mentioned. Please bear in mind that in fully developed teeth, such as might be filled with gold, this dissolution on the surface does no harm, the salts arresting further action as above described.

As the dentine becomes more porous, which condition is found in molars whose pulps were devitalized before maturity, it will be found that ordinary amalgam will not furnish sufficient salts to prevent continued action upon the plug, which also re-acts upon the lime constituents of the dentine. About all the use I ever found for copper amalgam was to line cavities of this class. It is practical and efficient. For several years I have used no copper in amalgam alloy. When cases are presented where copper would be indicated, oxyphosphate linings answer a better purpose. By this I do not mean filling a considerable portion of cavity, but merely filling the dentine and soft portions that must remain. The mix must be thin, so that it would drop from the spatula. It may be introduced by cotton wound firmly upon an excavator or other suitable instrument. Introduce the filling as quickly as possible, so as to force out any excess of cement. Dry the cavity borders and fill as usual. With this lining there is no thickness of cement to wash out, nor is there space for fluid circulation to cause the chemical shrinkage mentioned. Another advantage is that it does not discolor enamel.

I will quote the keynote of the author's object in writing, "The objections to amalgam can however be overcome, and a perfect filling be inserted, if the operation be performed as I here suggest. I advise that subsequent to the preparation of the cavity

the cavity-walls be lined with tin-foil, which must be pressed against them tightly, thus perfectly dressing them, then prepare the amalgam as usual and pack it in the cavity, then after some days the superfluous tin-foil can be trimmed away and the filling with its tin-foil border will take a high polish."

It is well known to our American readers that I have recommended tin linings in several papers, and will now mention the difference in practice. It is not necessary that the tin lining should overlap and be finished at another sitting for this reason, tin amalgam is weak and would give poor edge strength. The lining may be introduced so as to overlap, which is best for convenience, and I find that by the time the plug is completed the overlap comes away with the surplus material; in other words, the mercury cuts the tin at the enamel border, care is used that the tin furnishes no element of the filling at the enamel. A spoon excavator passed around the cavity will cause a slight depression to receive amalgam like the mass. The real benefits of this lining are not mentioned by the author. They are, the blending of the two elements mentioned, in all amalgams, so as to avoid chemical action upon the hidden surface of the filling. Practically and chemically the filling is one of tin amalgam, like that which is used on the back of mirrors; it does not tarnish easily, it does not disclose dentine, nor does the plug shrink.

The paper also recommends platinized gold as a lining for cavities—"When using the platinized gold it must be remembered that the overlap should be left undressed for some days." In this he is right. The lining would not be cut away with the mercury, nor would the material injure the edge strength. "After some lapse of time you will be surprised at the perfect margins, and the absence of discoloration in a tooth thus filled."

A word of caution may save some mistakes in the use of platinized lining. It should not be used where gold would not be admissable. Such fillings in effect are like gold, they do not oxidize, consequently do not offer any antiseptic properties, while the margins are bright and clear the amalgam proper will turn black, as fillings do in contact with gold. The lining, being the negative element in the plug, causes the filling to become positive.

The object of this review has been to give the readers both sides of the subject.

TREATMENT AND FILLING OF PUTRESCENT PULP-CANALS.

BY L. WEST, D. D. S., MONETT, MO.

In the January DIGEST is a digest of an article by Dr. H. C. West on this subject, which article is in the main a very good dissertation on the topic; but as there are several methods of treating the various forms presented, and all more or less successful, the question naturally arises, have we yet found the best method?

The Doctor's classifications and definitions are probably sufficiently accurate for all practical purposes, but when he begins treatment of his first class he says, "Gaining access should be done with the utmost care, by application of rubber-dam and very sharp drill, being careful not to let the latter press with force enough to cause the contents of the canal to pass through the apical foramen." After having gained a partial opening into the chamber he immediately applies $H_2 O_2$ upon a pellet of cotton by the aid of a broach, or better still the use of permanganate of potash, carried through the opening and allowed to dissolve there in the fluids.

I am unable to see what he gains or avoids by the use of the rubber-dam, unless he is afraid that some of the numerous bacteria which are always found in the secretions around the teeth will enter the pulp-chamber and disturb the hitherto peaceable occupant. Or does he apply it for the purpose of keeping the offensive contents out of the patient's mouth? What advantage is there in getting a thorough disinfection of the chamber before disturbing the contents of the canal, and how long before the $H_2 O_2$ or permanganate will produce the desired effect?

His further treatment, slightly varied, I have found to be generally satisfactory, but I never apply the rubber-dam to such teeth, and instead of using $H_2 O_2$ on broach first, I use it with the hypodermic syringe, wash out the contents of the canal as far as possible, and let the patient expectorate the resulting products into the spittoon. The $H_2 O_2$ will also sweeten the breath and make the further treatment more pleasant to the operator. Then I use the $H_2 O_2$ on cotton wound on a fine broach and pump it into the canal as far as possible until it ceases to give evidence of

further need of the remedy; dry it out, and with more cotton on the broach saturate the canal with campho-phenique. After which I dip the cotton into aristol to make a paste and put it as far up the canal as I can, and seal up the chamber.

If the tooth does not show any signs of irritation at the apex within a week or ten days I remove the dressing, and after cleansing and treating about the same as before I proceed to fill the canal with the aristol paste and a white gutta-percha cone. Then thoroughly cleanse the pulp-chamber and fill it and the remaining space of the canal with oxyphosphate. I never use any of the essential oils or anything containing any coloring matter besides the aristol, and after years the tooth will look nearly as clear as when first filled. Never use red gutta-percha cones nor iodoform, as I have seen teeth ruined by the coloring matter in them being absorbed into the crown.

The second class of cases is often cured by one or two treatments, such as were given to the first class, but if any of the septic products have escaped through the apex and are causing incipient abscess, I proceed at once to cut or drill through the alveoli to the apex of the root and make an opening for the escape of the inflammatory products. To do this with the least amount of pain I inject into the gum, at the point where I wish to make the perforation, a solution of cocaine and atropin in carbolyzed water, and after slitting the gum down to the alveoli drill through the anterior plate, and then inject the anæsthetic into the canaliculi and tissues around the apex. This will usually cause some pain, but in a few moments you can proceed to complete the operation with comparative ease to the patient.

This treatment should be done early and before any considerable amount of inflammation has developed, otherwise it becomes a very painful operation, which no local anaesthetic will prevent, and oftentimes it is a question between extracting, perforating, or allowing it to develop into a case of the fourth class. Iodine and capsicum plasters do some good in mild cases, but serve chiefly to amuse the patient while the destructive process is going on, which will usually perforate the alveola and, after discharging for a few days, will be ready for a thorough cleansing with the H_2O_2 , followed by carbolic acid. The latter is to be pumped through the canal until it appears on the gum at the fistulous

opening, care being taken that it does not run over the gum, but should that happen it can instantly be neutralized with bicarbonate of soda.

I then treat the root as in the other cases, and after the inflammation has subsided it can be filled, and any further treatment can be carried on through the fistula. In the treatment of the second class, where the effusion from the inflamed tissues at the apex would flow into and fill the canal, I treat by perforating, the same as if for curing chronic blind abscess.

My reason for treating these several classes of pulpless teeth so heroically is, that a radical cure is generally effected, while if we wait and delay treatment the inflammation may extend from one to another of the canaliculi until the roots of the contiguous teeth are as badly inflamed as the pulpless one. This may result in the breaking down of a considerable portion of the process around the roots, and in some instances I have seen portions of the alveoli as large as a filbert completely disintegrated by the inflammatory process. With a clear conception of the conditions present, and with clean sharp instruments, all this pain and danger can be prevented by making an early opening into the affected parts.

But, you say, some patients will not submit to such a plan of treatment. In that case we must do the best for them that they will allow, telling them the probable results as well as the possible ones in each course of treatment. If they prefer to suffer several days and nights, instead of a few minutes, that is their choice, but we should do our duty as far as possible in each case.

Cutting off the apex of a root is not so easily accomplished as represented, and I have found it one of the most difficult parts of operative dentistry. I am never sure that I have formed the nice, smooth, ideal cone of the remaining part which we hear others speak of making. The parts must be thoroughly injected with a good local anaesthetic, and even then there is more pain than the patient will ever care to experience a second time, and, while we often effect cures, I have thought that the good results come as much from the removal of the pyogenic membrane at the apex as from the excision of the apex itself.

A PLEA FOR A GREATER USE OF NON-COHESIVE GOLD.

BY J. N. CROUSE, D. D. S., CHICAGO.

Having read various papers on the use of gold and the filling of proximal cavities, I have been alarmed at the apparent disuse of an old but very reliable method, namely, the use of non-cohesive gold in the form of tightly rolled cylinders, which is the wedge principle. These cylinders are best made from No. 3 or 4 gold foil, which should be non-cohesive. If it has any cohesive-ness, that should be removed by placing the foil in a drawer with aqua ammonia for a few hours. To make the cylinders, fold the gold leaf upon itself until you have a ribbon a little wider than the depth of the cavity at the cervical margin. Having filed a broach to a triangular peak, lay it on one end of the ribbon and turn gently, when the gold will be wrapped around the broach, making cylinders a little more in width than the depth of the cavity.

These cylinders are made differently for various cases. In large cavities the first one or two may contain a sheet of No. 3 foil, the rest less; some rolled quite tightly on the broach, others less so. With a variety of cylinders thus prepared we are ready to fill well a large proportion of the cavities which occur on the proximal and buccal surfaces of bicuspid and molars, and in one-fourth the time required to make as safe a filling with cohesive gold.

About the same amount of time and painstaking effort is needed in either case to prepare the cavity, but it is shaped somewhat differently for non-cohesive gold, and especially for cylinders as described. There are no pits drilled in the dentine from which to start the filling, and the cervical walls need be but little undercut, as strength of anchorage when the cavity is completed is depended upon toward the grinding surface, this being the point where the greatest strain comes on the filling by force of mastication. The lateral walls usually have sufficient undercut when the decay is removed, or if not, slight grooves or undercuts should be made.

With the cavity prepared, and where the walls are of good strength it is a waste of time to use cohesive gold for any except

the latter part of the filling, and then only in cases where it includes part of the grinding surface, select a cylinder which when placed lengthwise will extend a little beyond the cervical margin, or in cases of large and deep cavities one large and long enough to rest against the opposing tooth and to entirely cover the cervical margin, and start your filling. In extreme cases two sheets of No. 3 made into one cylinder can be used to good advantage. Generally, however, a large cylinder on each side and a smaller one between the two makes a good foundation. Always remember at this point not to condense each cylinder separately, thus crowding them apart, but a place should be made for the next one, which should be rolled tighter and of a size that will occupy the place as a wedge. Continue until the cavity is about two-thirds full, when, if it is required, cohesive gold can be driven into and between the cylinders at different points, and then the whole mass of gold, being for the most part non-cohesive and so quite ductile, may be forced into every crevice, making a very perfect filling. On top of the cohesive gold already in the cavity we can readily add more and so continue the filling over and onto the grinding surface, contour and finish.

I leave the minute details of this old and tried method to a series of articles which I shall give later in the DIGEST, and give only what I have on the strength of this proposition,—that I can fill a class of difficult cases quite as well by this method, and in so much less time that, in justice to myself and the patient, I cannot afford to adopt the use of cohesive gold exclusively. Therefore, I make the plea for a greater use of non-cohesive gold in certain cavities.

AN ANALGESIC AND ANTISEPTIC DRESSING.—M. Delpech, of Paris, with the aid of M. Petit, has obtained an antiseptic and analgesic dressing, which he calls *la ouate picrique*. Picric acid was formerly used in the Spanish and English colonies as a febrifuge. Quite recently Dr. Thiery, *chef de clinique* of the Paris Medical Faculty, published the results of his treatment of burns with picric acid, and he noted the antiseptic and analgesic action of the acid. Dr. Delpech's *ouate picrique* is prepared as follows: Purified cotton wool is steeped in a saturated solution of picric acid; the cotton wool is then dried in a disinfecting stove; square sections of this cotton wool, steeped in water, even in cold water, immediately relieves, and in a short time entirely abolishes pain. Repeated applications of this wool, moistened, cure burns.—*Medical Record*.

NON-ERUPTION OF TEETH.

BY C. FISCHER, D. D. S. ZANESVILLE, O.

The interesting article of Dr. Robinson's in the October number of the *DIGEST* calls to my mind a case which presented itself in my office several months ago. A young girl, seventeen years of age, called to have a partial plate made. On examination I found the following teeth had not erupted: in the upper jaw the two laterals, the four bicuspid and the two second molars; in the lower jaw the two second bicuspid and the second molars. The other teeth were in normal position and all the necessary spaces for the missing teeth to occupy were present. The girl had difficulty in talking properly. The question in my mind is, whether a plate which would slightly press on the alveolar ridge and cause irritation and absorption of bone, would not thus coax the missing teeth into place.

TOTAL ABSTINENCE AND LONGEVITY.—Sir George Humphry has collected information regarding 45 centenarians, of whom only 12 were total abstainers, while 30 were moderate drinkers, and 3 were heavy drinkers. Of 689 persons between eighty and one hundred years of age, as given in Sir George Humphry's tables, only a fraction over twelve per cent. were abstainers, while nearly nine per cent. were heavy drinkers.—*Medical Record*.

SCHLEICH'S METHOD OF LOCAL ANÆSTHETIZATION.—The skin is first made aseptic, then pinched up and the sterilized needle of the syringe containing the solution, which should be cold, is passed obliquely under the epidermis, and a few drops are injected until a white elevated wale appears. The needle is withdrawn and inserted at the edge of this wale and so on until an area as large as may be desired is made anæsthetic. If the spot to be cut is first cooled by an ether or rhigolene spray, if it is the skin, and by a strong solution of carbolic acid if it is the mucous membrane, the prick of the needle is not even felt, but in the case of the small needle, which should be used, the pain is almost *nil*, especially when the skin is pinched. Wurdemann has used this method in operations about the eye, and also in abscesses and felons with success. Schleich has even done cœliotomies with it, but others might not dare follow this lead. The solution most usually employed is a grain and a half of cocaine, one-third of a grain of morphine, and three grains of sodium chloride in three ounces and three drachms of sterilized water. Two other solutions, one containing double the quantity of cocaine, and the other one-tenth the amount, are also used. The value of this operation is in the technique, and stress is laid on the point that the needle must not go beneath the skin. This process is capable of development and is worthy of a careful trial.—*Maryland Medical Journal*.

Digests.

The Pacific Stomatological Gazette for March, 1896.

"DENTAL JURISPRUDENCE, EVIDENCE," by H.R.Wiley, A.B., San Francisco. The "victim of circumstances" is a person who is frequently presented to the eye of the public as a sort of living appeal for commiseration. It is undoubtedly true that men sometimes become entangled in a net-work of malignant circumstances that seem to conspire to accomplish their overthrow. It is true, also, that many men who are regarded as the unfortunate victims of malignant circumstances, are, in reality, only experiencing the inevitable results of an almost criminal neglect of simple rules of self-protection.

We have had occasion to say before, when following this same line of thought, that it is not sufficient that a man be innocent of crime, but it behooves him also, in case of prosecution, to be prepared to answer any and all legal evidence tending to prove him guilty. The evidence of the prosecution must be met with stronger evidence for the defense. The court or the jury must decide each case in accordance with the evidence produced. The simple fact that the accused is wholly innocent of the offense charged, although it sustains the heart through the most scathing persecution, is not alone sufficient to insure acquittal.

Innocence is the best foundation for a case, and where the superstructure has been once built upon that foundation there is no fear of overthrow. The main fact of innocence must be made legally apparent to a jury through the medium of evidence, since there is no direct means of baring the heart of the accused to the eyes of his judges. The law presumes "that a person is innocent of crime or wrong," and the burden of proof rests upon the prosecution. The defendant's guilt must be proven, and if the prosecution fails to make out a *prima facie* case no defense is necessary, and the accused, shielded by this benign presumption of law, is held to be "innocent of crime or wrong." If, however, a *prima facie* case be made against the accused, then will the burden of proof be shifted to the defense.

Since "the direct evidence of one witness who is entitled to full credit is sufficient for proof of any fact, except perjury and treason," it is evident that situations may arise in which a patient, by his or her unaided evidence, may make a good *prima facie* case against a dentist, and in which the dentist may have only his uncorroborated statement to offer in his defense. In such a case the jury must judge the weight of the evidence, and a slight corroborative circumstance on either side may be sufficient to turn the scale.

The case of Dr. Beale, "a highly respectable dentist of Philadelphia," is a forcible illustration of conviction upon the uncorroborated testimony of one witness. Dr. Beale was charged with rape. The prosecuting witness was a young woman of excellent reputation, to whom the Doctor had administered an anesthetic, preparatory to extracting a tooth. On the witness stand she described with much precision events alleged to have transpired while she, according to her own admission, was so far under the influence of the anesthetic as to be unable to offer any physical resistance. Dr. Beale was convicted and sentenced to four years and six months' imprisonment. This case must seriously impress those who are familiar with the usual conditions of a patient in various stages of anesthesia. Much doubt seems to exist as to the possibility of clear mental perception at the stage of physical helplessness, and erratic emotions are among the most familiar phenomena of anesthesia.

On the hypothesis that Dr. Beale was an innocent man, he certainly faced a risk, by his method of practice, that only extraordinary circumstances could warrant. The presence of an attendant during the operation would have insured corroborative evidence as to anything that might transpire.

When the dentist is playing the uncomfortable part of defendant, in either a criminal prosecution or a civil suit for damages, he is in a position to understand the difference between a careful and uniform method, with a well-kept office record of practice, and a careless, uncertain and unsystematic course of business.

A man's business methods, when by a searching examination they have been developed before a court of justice, bear with them double significance. If he is innocent, and has pursued his practice with proper methods and in a systematic manner, the

evidence to prove his innocence will probably be available. If, on the other hand, his business has been without system, and he has preserved no accurate record of his practice, even innocence may avail him but little. Again, the man whose testimony is certain and based upon accurate business methods and careful records, all else being equal, makes a far more effective witness than he whose statements are made in uncertainty.

"RESTORATION OF THE CONTOUR AND THE OCCLUSION OF TEETH," by Dr. L. Van Orden, San Francisco; read before the S. F. Dental Association, Nov. 11 and Dec. 9, 1895. The writer, after describing some of the methods of filling in vogue twenty years ago, says, I have tried to rivet attention upon the interproximate spaces, and show, in some measure, the bad results liable to flow from unskillful restoration of approximal decay, and the occasional necessity for creating cavities in the approximal surfaces of teeth, that spaces might be bridged over with filling material and the unprotected gum saved from frequent irritation, and even extensive absorption, through food pressure.

While the incisors, where the bicuspid and molars are present, are less liable to suffer from food pressure, every care should be used to prevent the possible formation of pockets by leaving the cervical portions of fillings finely finished and shaped, that the gum festoons may have every encouragement to resume their wonted position. We are forcibly reminded that these gum festoons have much to do with the beauty of a denture, when they present a blunted appearance through destruction of the underlying process in phagedenic conditions, or when rude methods have been resorted to in wedging teeth and finishing fillings.

But it is in the bicuspid and molars that the good or evil effects of our methods of preparing cavities and inserting and finishing approximal and approximo-occlusal fillings are most noticeable, and in them we will be justified in centering our main attention. There is a class of long, narrow and firmly set teeth, in which it is difficult to secure free space by wedging; the possibility of exposure of the pulp must be constantly kept in mind. Such cases are very trying, and shortening the depth of the cavity by a layer of amalgam may reduce the difficulty. The

main misfortune is, that the teeth are too narrow to permit of free cutting away of the margins of the cavity, that they may be removed from near contact with either the approximating tooth or the fillings. It is not enough that fillings be nicely rounded and contoured. To prevent renewal of decay, the margins must either be cut freely back or they must be carried back by change of position of the whole tooth through the process of wedging. In dense, broad and firmly set teeth, free cutting back of the buccal and lingual margins, having just enough room to permit a good finishing, and an absolute gum-protecting contact of the new approximal surfaces is all that seems to be indicated or even feasible at times. It is when we have to deal with an extensive series of approximo-occlusal cavities in a mouth where the teeth are confessedly lacking in power of resistance, that the slow and liberal wedging by cotton gives its best results.

Dr. Bonwill has demonstrated in a high degree his genius in the treatment of carious teeth by introducing and extolling his process of slow wedging with pink gutta-percha. I wish to commend that system quite highly; it seems to promise, in the main, most gratifying success. Its true use includes the free trimming of cervical margins at the first sitting, and the careful removal of carious material at that or subsequent sittings. His method, adapting pink gutta-percha base-plate as a matrix for controlling the shape of large contour fillings, should be adverted to.

In the restoration of the occlusal or masticating function of teeth, the loss of which is due either to accident, decay, or extraction of adjoining teeth, the question of retention or anchorage of the fillings, when crowns are not resorted to, is possibly one of paramount importance. Having recognized the desirability of making very heavy or plus-contour fillings in the molars and bicuspids, the writer has concluded as, no doubt, many others have, that surface or occlusal anchorage is the one best calculated to offset the unusual strain or tipping force; and during the past year has made use of broad, shallow dovetails cut in the occlusal surfaces with the aid of rubber and corundum disks. These disks, when new, are 5-16 and $\frac{3}{4}$ of an inch in diameter, and are very durable, becoming more valuable as their size is reduced. They cause little pain, and leave a fine, smooth surface, and by canting them an undercut of any extent can be secured. Mounted on a

short screw mandrel, and operated with a right-angled hand-piece, dovetails can be placed in locations that the straight hand-piece will not reach, notably in the tipped and rotated inferior second molars. A disk used in the angle hand-piece is invaluable in shaping the crowns of teeth for the anchorage of bridge-work. A broad, shallow anchorage is recommended in the bicuspid especially, because of the well known tendency of those teeth to split when extensively decayed. A tooth is no stronger than its weakest part, and it is well to preserve as much binding tissue between the lingual and buccal halves as possible. Other things being equal, it would not appear to matter whether a given amount of anchorage gold were placed perpendicularly in a deep narrow trench cut in the sulcus of a bicuspid, or placed horizontally in a broad, shallow dovetail. It is obvious, though, that the deeper the cutting the less is strength conserved. On the other hand, with a power mallet, facility of introduction of gold increases with breadth of surface. The desirability of reducing the size of the cusps of bicuspid, and their protection with a layer of gold, when fracture is imminent, should not fail of mention. The writer cheerfully admits that the use of corundum disks has long been known to the profession for the cutting out of the cross-fissures in molars and the sulci of bicuspid. The friability of the ordinary fissure disk has no doubt retarded their use. The use of carborundum and other points and stones for cutting out and shaping cavities may be referred to as well.

In concluding this subject, in all too brief a manner, I desire to more especially call your attention to the feasibility and comparative ease of restoring the masticating function of tipped and rotated second inferior molars (the first being absent), and also the conversion into a useful tooth of the comparatively worthless impacted wisdom teeth. In fine, to sound a note to the effect that however brilliant may be the operations in crown-or bridge-work and other interesting fields of dental effort, that to restore to function the natural dental organs, and to secure them a comfortable and sound resting place is, and will be ever, the most worthy calling of dentists.

"OPERATIVE MEASURES WITH DECIDUOUS TEETH," by Dr. L. L. Dunbar, San Francisco; read before the So. California Odonto-

logical Society, Oct. 1, 1895. Begin by making a child your friend, and its call a friendly one, and you will be surprised to know how soon its visits will be looked upon in the light of a privilege; a treat to be enjoyed. Every dentist in the enjoyment of a family practice should early make the acquaintance of the little ones of his clients; first, for the direction of prophylaxis, and subsequently for such operative measures as may be necessary; and should such be required, the way has been paved for successful work instead of the usual scene that accompanies the visit of an irrational mother to an equally irrational dentist, a half-hour of which generally uses up all concerned.

Extensive operations should not be necessary in very early life. Where parents have been properly instructed, and the child has been frequently examined, the first operation called for will be that of filling cavities on the proximate surfaces of the premolar and molar teeth, and in the grinding surface of the latter. These are the commonest manifestations of caries in the deciduous teeth, where early operation is of greatest importance. The looseness of structure of deciduous teeth makes results very uncertain where there has been much encroachment of dentinal territory; indeed, it seems almost impossible to save some deciduous teeth once the enamel has been penetrated by decay, owing to the excess of organic material. It is important, therefore, that the earliest appearance of weakness or decay be met promptly.

In all operations on the deciduous teeth avoid the use of the clamp and dam. The necessary preparation of cavities can always be made without any special attention to the exclusion of moisture. If, however, this should be found necessary, it can be accomplished by the use of two lengths of absorbent cotton roll of suitable diameter, placed one each on the buccal and lingual surface of the tooth, where they can be held by finger pressure. This will be found more efficacious and less formidable than the folded napkin.

Do not hesitate to use the engine if in your judgment it will do what an excavator cannot without inflicting more pain. This instrument has been made the bugbear of all dental operations by indiscriminate use, with points utterly unfit for the work, both in respect to size and condition. It should be used in the oper-

ation under consideration in preparation for retention only, using 33½ or 34 inverted cone points (new and sharp.) The opening and cleansing of the cavity should be done with small hatchet and spoon excavators, making as few direct cuts as possible, rather paring the tissue in a gentle manner, without haste. When this is accomplished satisfactorily, a touch or two laterally with a small sharp cone point in the engine will give all the retention required. Where the cavity is one on the grinding surface and small, the cone point in the engine will be all that is necessary to properly prepare it for filling.

I can see no objection to the use of gold in small cavities of this character, provided it is used in some of the plastic forms for use without the mallet. The principal object to me seems to be to get the cavity filled as soon as possible with some material that will require the least time to insert, and be indestructible to that end. I have always used amalgam in these cases with satisfaction.

Where the interspace presents a cavity on each proximate surface, do not make the mistake of filling both cavities as one; if, however, for convenience of insertion the plastic has been put in in one piece, bridging over the interspace, it should be carefully separated by picking away with broach points, or flattened points made from broken broaches, until the space is clear. To do this effectively it is better to wait until the amalgam has crystallized somewhat. As this takes time, it would probably be better to fill one of the cavities with low heat gutta-percha, and complete the other with amalgam, which, at a subsequent sitting could be finished, and the other permanently filled in the same way.

The more formidable operative measures are presented to us in the treatment of neglected caries in the same region where the pulp has been invaded or encroached upon. These are usually brought on through the pain experienced, and anything like immediate filling is here out of the question. The cavities are to be opened with care and the disorganized tissue removed, particularly in the region of the orifice of the cavity. If the dentine in the direction of the pulp cavity is not much disorganized, it may be thoroughly sterilized after securing immunity from the invasion of moisture. The agents used for sterilizing should be wood creosote, carbolic acid, or a eugenol

solution of iodoform (preferably the latter). After sterilization a bit of asbestos paper, saturated with the sterilizing solution, may be applied, and over this an oxyphosphate filling.

Efforts at pulp conservation in deciduous teeth are not always successful, because of the susceptibility of their structure to decay-producing agents. It requires a nice judgment to determine upon the advisability of conservation efforts; a judgment to be gained only by experience and observation. It will oftener be necessary to devitalize in these cases, as in others more advanced, depending, of course, upon the conditions surrounding each—constitutional tendencies, etc.

When it is deemed necessary, carefully make an application of cobalt rubbed up in oil of cloves directly to the exposed surface, cover with gutta-percha, and at an early sitting (not later than forty-eight hours) remove the application and enlarge the canal opening with a round bur, after which pick out all the remaining pulp-tissue as carefully as may be; dry out the canal and fill it up with iodoform crystals, either in a menstruum of eugenol or with a vaporizer. Over this can be flowed salol by melting the crystals with the aid of a hot-air instrument, though this latter is not necessary, as I have had equally good results before the introduction of salol. The cavity can then be filled with the assurance of no further trouble.

Where much disorganization of pulp-tissue has taken place, and an alveolar abscess has supervened, it is only necessary to open freely, wash out and sterilize the root-canals; these being filled, as before, with iodoform crystals. Other methods of root-filling are not applicable in these cases, and it has been found that the permanent antiseptic character of iodoform insures the greatest immunity from destructive changes.

The deciduous molar should be saved at all hazards until the approach of the second bicuspid of the permanent set. The retention of both pre-molar and molar is desirable, in order to keep the first permanent molar from encroaching upon the territory of the bicuspids, thus inducing a crowding out of the arch of the later-erupting cuspid, producing the well-known deformity called by misinformed laymen "buck teeth," for which they, or their immediate neighbors, the lateral incisors, have been often sacrificed.

I should interdict the use of arsenious acid nerve paste in the mouths of children, and, in the absence of cobalt, use dental tincture of iodine, repeatedly applied. Concentrated spirits of ammonia is also an excellent and painless means of devitalizing deciduous pulps, and is also a satisfactory application for the relief of pain from an exposed pulp in a deciduous tooth.

It is rare that operations on the anterior teeth are called for, but here, as elsewhere, if decay has begun, you cannot operate too soon. Especial care should be exercised in excavating a cavity in the anterior teeth, as the pulp-chambers are greatly out of proportion to the size of the teeth. A good oxyphosphate will answer every requirement as a material for filling; and if salol or paraffine is flowed over the filling by the aid of the hot-air syringe, it will resist ordinary wear for a considerable time. Pulpless teeth are to be treated here upon the same general principles laid down for treatment of pre-molars and molars, cautioning the parent about the period of eruption of the tooth of replacement.

Most formidable among the operative measures with deciduous teeth are the necessary extractions. In a well-cared-for mouth these will be reduced to a minimum, and are likely to be only those which will require but a slight effort with a small elevator. There are cases that come under your hands, however, at a period when all the posterior teeth are wrecks, where extraction will be demanded. This is usually about the seventh or eighth year, when it will be well to consider the outcome of an extraction before deciding upon such a course. To keep the jaw patulous in the developmental stage has always been my practice, avoiding extraction unless forced to it by unremitting pain.

Never allow septic matter in a pulp canal to remain as a source of infection, nor permit the continuance of an alveolar abscess fistula, "because it affords a vent for gases;" if the septic source were removed there would be no gases, consequently, no abscess.

The Dominion Dental Journal for March, 1896.

"OBSTINATE BLEEDING," by G. V. N. Relyea, L. D. S., Oswego, N. Y. I will relate a case just treated. The servant girl of my family physician called to have an inferior molar extracted. The fangs diverged, which caused it to come very hard, but, taking time and care, I brought it out safely. Here let me say, better

be a minute in getting a tooth out than a second in breaking it. My patient left me, and, as usual, I forgot about it until the doctor came in the next morning to inform me that it commenced to bleed three hours after the operation and continued to bleed all night; he also reported much pain combined with the bleeding. Calling to mind the difficulty in extracting, I suspected a fracture of the process. However, after a close examination I found no injury had been done, and after removing the coagulated blood it should have been syringed out with tepid water; but I did the best I could under the circumstances, and, in a word, I arrested the the bleeding, and the young lady went out riding the next morning. I will now give my manner of treatment when all the necessities and conveniences are at hand. After the accumulations are removed, roll up a piece of bulbous paper hard, about the size of a small pea. This, fully loaded with wood creasote (not the commercial article, but *pure wood creasote*), force down hard, and continue to pack as you would gold in a cavity of a tooth. When three-fourths full, roll a larger piece and place in the mouth of the cavity, which must be forced down and left in for several hours. Should it show signs of bleeding again, remove and repeat the packing system, and, if properly done, success is certain.

Modelling composition will be found an excellent temporary stopping. It is easily manufactured, is a non-conductor, and the temperature of the mouth keeps it in a condition to be easily removed, and it will wear for weeks and months.

The Ohio Dental Journal for March, 1896.

"ARTISTIC STAINING OF ARTIFICIAL TEETH," by Geo. H. Wilson, D. D. S., Cleveland, O. There has been very little interest taken in this work, and we have no outfit for its performance put up in this country. George Poulson, of Dresden, and Ash & Sons, of London, make colors and implements for this work. They are stains, and do not add anything appreciable to the surface but color; while the pastes, which Dr. Geo. Cunningham, of England, exhibited at the Columbian Dental Congress, add a material to the surface, and in many places produce the desired effect that can be secured in no other way.

Any one desiring to begin this work can purchase either the Poulson or Ash & Son's set, through the dental depots, or the

materials I shall name, at any art store. I shall give two lists, the first is all I recommend to the novice; the second to be procured as the emergency requires, or the novice's ambition dictates. First. Sepia; light gray, No. 1; ivory black; oil of cloves; alcohol; one small pencil brush; one stippler brush; one spatula, horn or steel; one glass slab. Second. Rose pompadour (gum color); ivory yellow; brown yellow; celestial blue, and relief white. These colors are the Lacroix, except the relief white, which is Dresden. All mineral paints have to be burned into the porcelain. We will describe this process later.

We will first describe the use of the various articles: A plain glass slab, on which to mix the colors in small quantities; a spatula, with which to grind or mix the paints together, or with oil; a stippler brush, a short, stubby, square end brush, with which to spread or even the paint by striking (stippling) with the end of the brush; alcohol, with which to clean the teeth, the brushes, and to remove the waste paint from the slab; oil of cloves, to thin the paints as necessary for the desired effect. There are other oils that can be used, as oil of lavender, fat oil of turpentine, etc., but the oil of cloves is probably already in the office. Gray and black are the foundation colors of nearly all the work we will probably be called upon to do. The ivory black will rarely or never be required by itself, but is used to deepen the color of both gray and brown. A very little black will have a decided effect, and should be thoroughly mixed before applying.

Observation of the natural teeth in the mouths of our patients is absolutely necessary to distinguish the brown and gray shades; also a little time must be spent in the laboratory in studying the effect of a thin and a thick coat of each of the colors, and more especially to note the effect of the stain upon the original color of the porcelain tooth. If the tone of the tooth is yellow, and brown is added, it will not only deepen the color, but will bring out a most decided brown color; but if the tone is blue or gray, then the brown would first deepen the original color, and would give only a decided brown, as quite a quantity had been added. The study of this fact means the success or failure of staining porcelain teeth. Mastering this point means successfully producing in the laboratory what the eye for color has seen at the chair is needed.

It must not be supposed that this method can be used in all cases; it is the exception and not the rule. There are two classes of cases to which it is especially applicable. The one is where we have not at hand such a set of teeth as we desire in color. We can deepen the foundation color, change the tone from gray to brown, or brown to gray, and vary these from a light tint to a very decided one. It should be borne in mind that we do not produce an underglaze color, but one upon the surface; hence its legitimate use is to produce stained teeth, which are more suitable for middle and aged people than for the translucent effect of earlier life. The stains can be largely removed by the use of sandpaper, or by the severe use of the felt wheel and pumice. It is not necessary in the proper polishing of vulcanite to remove the stain, but by an indifferent use of the sandpaper and pumice a portion of stain will be removed, but not by any use the denture can have in the mouth. The other class is in partial cases, to reproduce peculiarities of the natural teeth. It is not uncommon that we have brown and gray discolorations in the same tooth, as brown at the gingival portion and gray at and near the proximate surfaces, ranging from incipient black decay upon the proximate surfaces, appearing gray through the translucent enamel, to the more extensive gray color of leaking fillings.

Desiring to change the tone of the tooth, or give a deeper shade, it will be necessary first, to remove all wax and clean the tooth with alcohol, drying it with a clean cloth, then hold the tooth by the pins in a pair of pliers; having mixed the color with oil of cloves, either thin or thick as we desire a light or dark shade, apply with the pencil brush. The paint can be more evenly spread with the stippler brush. The surface should be gone over with a stipple motion, that is, striking with the end of the brush, the brush being held at a right angle to the surface of the tooth. At any place that the paint is not heavy enough, more can be added by the pencil brush and then stippled. If the color is too heavy at any portion of the tooth it can be removed by wiping lightly with the end of the finger and then stipple. When all of the teeth are so treated they are placed upon a slab to dry.

To fix the color and give it a glazed surface it is necessary to subject it to a high heat, about 2,000 degrees F., or the fusing

point of gold. This burns out the oil and fuses the solid particles of the stain which unite with the surface of the porcelain. It makes little difference how this heat is obtained, just so we get it, if evenly applied, that is, not so suddenly as to fracture the tooth. Having thoroughly dried out the oil by placing the fire-clay slab over the Bunsen burner, the teeth can be safely subjected to the higher heat and brought to the proper temperature in two minutes time. Any furnace can be used, or, not having one, any one having a blow-pipe can easily improvise one at small expense. Get a piece of fire-clay slab about an eighth of an inch thick, upon which the teeth are placed, with the pins resting upon the slab. Shape a piece of No. 36 standard gauge platinum plate, so as to cover and enclose the teeth, except one side, which is left open as a peep-hole. This miniature oven or furnace, containing the teeth just from the brush, is placed over the Bunsen burner for about five minutes, when the flame from the blow-pipe is placed against the under side of the clay slab, gradually bringing it over upon the top of the platinum. Two minutes' work of the blow-pipe should suffice. Take away the blow-pipe and turn off the flame of the Bunsen burner at once, remove the platinum cover and permit the teeth to remain upon the slab till they are sufficiently cooled to handle with the fingers without discomfort, when the work is finished. The work will require less time than I have been in telling it. I have taken a porcelain tooth I had fitted to the root, stained, burned, cooled and returned it to the mouth in fifteen minutes' time.

While the instructions I have given have been for evenly shading the teeth, by the same process, that is, laying on with the pencil brush, whipping off with the finger, and stippling, any result desired can be produced.

If we desire to combine colors we should always burn a sample to know what the result will be. Thus, the ivory black will deepen the gray or brown according to the amount of black used, but if we combine blue and yellow we will get green, then by modifying this green with brown we will get the peculiar green stain so often found in the mouth.

Salivary calculus effects can be produced by laying on the relief white without thinning with oil, burn on and then stain with brown. White spots or an over-deposit of lime salts can be rep-

resented by a thin layer of relief white, stippling and burning in. Atrophy and worn conditions are produced by grinding and then staining.

Gum color, either light or dark color, according to the amount of rose pompadour used. A still lighter effect can be produced by building up the portion representing the gum with some white body; bake it on, then paint with the gum color and fire.

I have not been successful in imitating gold fillings. Precipitated gold is the form of gold accompanying the English and German sets; they appear perfect when first applied, but will not stand the wear necessary in the mouth. Dr. Grant Molyneaux informs me that the chlorid of gold will withstand the wear. I have not tested it. To burn on the gold will require about 500 degrees less of heat than the other colors mentioned.

British Journal of Dental Science for March, 1896.

"ORAL SURGERY," by Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S., Eng. *Leontiasis Ossea*. This is the name given by Virchow to a curious condition in which the bones of the skull and face become greatly deformed by the development of irregular growths of bone. This condition has also been named Diffused Hyperostosis.

The disease usually begins in young subjects. In some cases its onset has been marked by pain and swelling of the face or by other inflammatory symptoms following upon an injury or exposure to cold. In other cases the disease has begun and progressed insidiously, without any discoverable cause. As the bony growths increase in size, the features become hideously distorted, the eyes being displaced and sometimes destroyed by pressure, and respiration and mastication are greatly impeded by the invasion of the nasal and buccal cavities. The disease may last for many years, death eventually resulting from emaciation or from some other intercurrent affection.

On examining the skull of a patient who has suffered from this condition the bones are found to have become greatly changed. The disease may be of limited extent, perhaps only affecting one maxilla, or it may involve all the bones of the skull and face. The affected bones present a coarse tuberculated surface and are studded with rocky, shapeless outgrowths projecting into the

orbits, nasal cavities, and mouth, as well as upon their external surfaces; these outgrowths sometimes assume considerable size, forming tumors which may project as much as three inches from the face. In the specimen shown the mandible is scarcely affected, but in some cases it may be so much enlarged that its ramus or body measures five inches or more in circumference.

On section the bones are found to be composed of uniformly hard and dense, but finely cancellated, bone; the maxillary frontal and ethmoidal sinuses may be completely filled up with bone so that no trace of these cavities can be found; the sockets of the teeth may be similarly affected.

Microscopic examination shows two kinds of bony tissue, the one compact and the other cancellous. The compact tissue does not differ much from the normal structure, but the cancellous tissue shows large irregular spaces somewhat resembling primary bone; there is but little trace of lamination, the lacunæ are very numerous, small, and arranged irregularly; definite Haversian systems are for the most part absent.

With regard to the etiology or pathology of leontiasis nothing is known.

The treatment is very unsatisfactory. Drugs are useless, although some surgeons think that benefit may be derived from the prolonged administration of iodide of iron.

When the disease is of limited extent, affecting only one bone, or giving rise to one or two definite excrescences, the surgeon is justified in removing the affected parts by operation; but the proceeding must be regarded as palliative rather than curative.

Acromegaly. This is characterized by great overgrowth of the hands and feet and deformity of the face. The legs and forearms are not usually enlarged, The spine often presents a posterior curve in the dorsal region. The skin is thick and sometimes warty, and the hair may be unusually long and coarse. The cranium is often enlarged, especially in its antero-posterior diameter. The jaws, especially the mandible, are nearly always enlarged. In the patient from whom the accompanying illustrations were taken, the lower wisdom teeth were 2.8 cm. further apart than the corresponding teeth of the upper jaw, and the lower incisors were 1.7 cm. in advance of the upper teeth. The nose is increased in size, the lips are thick, the lower one having a tendency to protrude

and hang down; the tongue is large and soft, and presents ridges and furrows on its upper surface.

This disease affects persons of either sex, and has been most often observed between the ages of twenty and forty. The subjects of this disease often complain of headache and general lassitude, and the speech is usually thick and slow. In women the catamenia are nearly always suppressed.

The pathology of acromegaly is not at present understood. All the tissues of the affected parts are equally overgrown; in the hands and feet the bones are enlarged as well as the soft parts. In several cases which have been examined post mortem the pituitary body has been found enlarged, atrophied, or affected by a new growth, and pathologists are inclined to think that disease of this body is an essential factor in the production of acromegaly; in some cases the thyroid gland, thymus or sympathetic nerves have been diseased, but it is not known at present whether these conditions are causal or casual.

No treatment is of any special use.

Osteitis Deformans. This is a very chronic form of inflammation of bone, occurring in old people. The affected bones become increased in size and bent. The disease affects the bones of the cranium and the long bones; those of the face and of the hands and feet are unaffected. The distribution of the disease is therefore in a sense complementary to that of acromegaly, from which it may be readily distinguished. Nothing is known as to its cause, and no treatment hitherto used has been found to do any good. The disease is briefly noticed here to distinguish it from leontiasis and acromegaly.

Actinomycosis. This is a disease which results from the introduction into the body of a vegetable organism called Actinomyces. This organism appears to grow naturally upon barley or corn, and for this reason the disease is much more common among cattle than in man. Actinomycosis of the tongue and jaws of cattle has been long known to veterinary surgeons, but it is only during the last fifteen or twenty years that its pathology has been understood, and its occurrence in man recognized. The manner in which the parasite enters the body varies in different cases; sometimes particles of barley or corn have been found at the seat of affection. In man the disease may begin in the mouth, in the intestines, in

the lungs or in the skin. Wherever the parasite establishes itself in the body it gives rise to inflammation and the formation of a large amount of granulation tissue. In some cases the granulation tissue becomes converted into fibrous tissue, forming a definite lump or tumor. In other cases the inflammatory process goes on to suppuration, abscesses are formed and discharged, and a fungating mass of granulation tissue and parasitic growth protrudes on the surface.

Although the parasite may lodge in almost any part of the body, the jaws are the structures most frequently affected. The parasite usually gains access to the pulp of a carious tooth and gives rise to a train of symptoms resembling those of alveolar abscess. The inflammatory swelling slowly increases, so that in a few weeks a definite tumor has formed. When the maxilla is affected the tumor bulges at some part of the cheek; when the mandible is the seat of the disease the swelling is most often found at or near the angle of the bone. The tumor, which is fixed to the jaw, is at first hard and subsequently softens so that fluctuation may be obtained. Eventually the swelling bursts on the face or into the mouth, discharging a turbid serous fluid in which are suspended very characteristic small yellow granules consisting of masses of the parasite.

On passing a probe into the sinuses bare bone can be readily detected. The skin and subcutaneous tissues of the face and neck become diffusely infiltrated and the submaxillary lymphatics may inflame and suppurate. The progress of the disease is accompanied by a certain amount of febrile disturbance, the temperature varying with the freedom of the discharge. After a longer or shorter time the prolonged suppuration leads to emaciation or even to lardaceous disease. In some cases the disease assumes a pyæmic form and metastatic deposits take place in the internal organs. As a rule the disease is chronic, lasting one or two years, but in some cases death occurs in a few months. The prognosis seems to be worse when the maxilla is affected than when the mandible is the seat of the disease.

On examining the mandible after death or after removal, it is found to be expanded and hollowed out by a number of cavities opening on the surface by large cloacae. These appearances are best seen after the bone has been macerated to remove the soft

parts. In the recent state these cavities are filled up with a soft honeycombed whitish mass, composed of granulation tissues and parasite. On microscopic examination this granulation tissue is found to contain a number of small radiate masses which are minute colonies of actinomyces. The centre of each colony is composed of extremely fine interlacing threads and small round bodies resembling cocci; the periphery is composed of club-shaped bodies which are the enlarged bulbous ends of the threads. These club-shaped bodies are the most characteristic feature of the parasite, but they are not an essential part of it, being probably only the swollen and degenerated ends of the thread or filaments (so-called involution forms). The threads are best seen in pus. They are long and delicate; they often branch dichotomously and contain a number of round bodies like cocci. They are the actively growing and essential part of the parasite. Actinomyces has been cultivated outside the body and the disease has been reproduced by injecting artificial cultures into animals, thus proving that the parasite is the cause of the disease.

Treatment. As soon as the diagnosis is established a free incision must be made into the affected parts, and all the soft granulation tissue thoroughly scraped or gouged away, the cavity in the bone being treated in the ordinary manner. Iodide of potassium in large doses has a marked effect on the growth of actinomyces, and should be prescribed more especially if it is found impossible to eradicate all the diseased tissue surgically.

"TRIGEMINAL NEURALGIA AND NASAL DISEASE," by Mayo Collier, F. R. C. S., from the *Lancet*. Within the last twelve months two cases of severe and persistent facial neuralgia that up to then had defied all treatment have come under my care; they were referred to me by my colleagues, Dr. Guthrie and Dr. Cagney of the North West London Hospital. I have postponed till now publishing an abstract of these cases in order to try the validity of the cures by the test of time.

The first case was that of a man aged fifty who was for some time under the care of Dr. Turner, of the Hospital for Epilepsy and Paralysis, Regent's Park, and I am indebted to him for the early notes of this case. In short, this man had suffered severely for the last four years, and latterly the frequency, duration, and

intensity of the attacks had made life almost unsupportable. An examination of the nasal cavities revealed extensive disease of the middle turbinated bone on the right side. The removal of this resulted in almost immediate as well as permanent and complete cure. The second case, that of a female, aged thirty-eight, kindly sent me by Dr. Cagney, was on all fours with the man's case, only of longer duration (twelve years), and at times greater intensity. An examination here revealed disease in the same situation, and the same fortunate result followed its removal. Of the many recorded cases of trigeminal neuralgia I find few attributed to nasal disease, but taking into consideration the wide distribution in the nasal cavities of the many branches of the nasal ganglion on the second division of the fifth nerve, it is not surprising that a considerable number of these cases are, in fact, due to irritation in one form or another of the branches of this nerve in the nose.

The Therapeutic Gazette for March, 1895.

"STUDIES IN ANÆSTHESIA AND ANÆSTHETICS." Keefe writes under this title in the *Boston Medical and Surgical Journal* of November 28, 1895. He thinks if there is any suspicion of weak heart, the patient should be put under the influence of digitalis for twenty-four hours, and given a hypodermic of four grammes of the tincture before beginning the inhalation.

Every one administering an anæsthetic should measure the dose. Fifteen grammes (or half an ounce) of chloroform is a proper dose to produce anæsthesia in an adult, and should be poured on at once, and no more should be used except as needed to continue the anæsthesia.

Forty-five grammes (or $1\frac{1}{2}$ ounces) of ether is enough for a woman, and sixty grammes (or two ounces) is enough for a man, and should be the charging dose. There may be an exceptional case where even sixty grammes will not subdue a patient, but such an one should be considered not a good subject for ether, and chloroform should be substituted or added.

The face, pulse, and respiration, in order named, should be watched attentively during chloroform-administration, and the respiration and pulse in ether. It is not enough to see that the chest moves; we must hear the air enter the lungs.

A good plan is to combine chloroform with ether, especially if one fears to assume the responsibility of using chloroform; and twelve grammes (or three drachms) of chloroform and thirty grammes (or one ounce) of ether is a good charge and can be depended upon to produce anaesthesia. In this way the stage of excitement so common in ether anaesthesia is avoided.

Withdrawal of anaesthetic, the frequent momentary inversion of the patient, artificial respiration, strychnine, heat, digitalis, the galvanic battery, and sponging or sprinkling of face and breast with ice-water, are the means for restoration of function arrested by anaesthetics.

"OPERATIVE TREATMENT OF THE DISEASES OF THE ANTRUM OF HIGHMORE." Freeman (*Journal of Am. Med. Ass'n.*, Nov. 30, 1895,) holds that when an empyema of the maxillary sinus is due to disease of a molar or bicuspid the tooth should be extracted under nitrous oxide gas, and the cavity reamed out to admit a tube four to six millimeters in diameter, thus enabling the surgeon freely to irrigate and medicate the cavity. The most desirable apparatus for drainage is a gold tube, with a collar fastening it securely to a neighboring tooth. Where it is necessary to clear up the diagnosis as to the presence or absence of a foreign body or growth, exploration through the canine fossa is proper. The opening should be large enough to allow the introduction of the finger, and is easily accomplished by means of a drill. After carefully exploring the cavity, removing any cause of irritation, curetting, if necessary, and breaking down bands, a light iodoform gauze packing is applied. The author advocates packing daily with thymol gauze for a week, and then fitting an obturator of metal or hard rubber, which is held in position by the pressure of the cheek. Introduction of tubes of small calibre into the antrum for drainage is perfectly futile, since the muco-pus is too thick to escape through them.

The intra-nasal irrigation and drainage route is usually to be preferred to the oral. Treatment through the middle meatus is to be condemned. Operations through the wall beneath the inferior turbinal are of real value. Mikulicz makes an opening three-eighths of an inch broad by five-eighths of an inch long, far up under the inferior turbinal, where the wall is usually quite

thin. Through this large opening the pus can drain quite freely into the nose, although the perforation is at times some distance above the floor of the antrum. It is not, however, an operation to be undertaken lightly, for the pain without total anesthesia is considerable, and the hemorrhage frequently demands tamponing of the nares for one or two days. This operation is to be ranked with that through the canine fossa for severity, while it is inferior in that it allows no examination of the interior of the sinus. Even with so large an opening, some patients are unable to cleanse the cavity themselves.

Less objectionable, though still possessing serious drawbacks, is the method of Krause. He penetrates the outer wall of the inferior meatus far up and back with a strong curved trocar and cannula, washes the cavity once, and insufflates iodoform. But he puts nothing into the opening to maintain its patency, and so every second day the cannula, armed with an obturator, must again be forced into the cavity. If one considers how rapid the healing of such punctures is, and the great tendency there is for granulations to form, he will realize that this treatment constitutes really a series of operations which must be done under cocaine. Bloch objects on the ground that the opening is extremely difficult to find. While some of Krause's cases are cured in a few weeks, others require months of treatment, and few persons could be found in this country to submit to such an ordeal. Another objection is that the patients are unable to carry out the treatment themselves. Again, both Krause's and Mikulicz's instruments are too large to be used in making a trial puncture, so that the diagnosis in obscure cases must be confirmed by another method before undertaking theirs.

While many ingenious methods have been devised for the intra-nasal operations, one very important thing seems to have been overlooked, viz., a simple and practical means of keeping open the perforation, so that the treatment may be readily carried out by the patient as well as the physician. To overcome this objection has been the writer's principal aim in the operation presented below. In suspected cases of empyema it is often necessary to irrigate the cavity, as first proposed by Ziem, to determine whether pus be present. While he prefers to make the puncture through the alveolus, the majority of operators lean to the intra-

nasal position. Lichtwitz goes so far as to make a trial puncture under the inferior turbinal, and, finding pus, operates on the sinus through the mouth. Following him, the author also uses a straight trocar and cannula, but, instead of making the opening in the Mikulicz-Krause position, he perforates low down and more anteriorly. The nasal duct lies thirty to thirty-five millimeters from the naso-labial junction, and, unless it opens in a furrow, its exit is high up under the turbinal. Freeman keeps close to the floor of the nasal fossa, which at times necessitates penetrating thicker bone, but this is quickly and almost painlessly done, and the disadvantage is compensated by entering the cavity near its bottom and thus securing better drainage, while the risk of injury to the tear-duct is avoided and a resting-place for the head of the tube is obtained inside the pyriform aperture. The inferior turbinal and naso-antral wall beneath it are first anesthetized with ten-per-cent. cocaine solution. Using special trocar and cannula, a few taps with the mallet cause it to penetrate the wall, the entrance into the antrum being unmistakably recognized by the absence of further resistance. Withdrawing the trocar, warm sterilized normal salt solution is at first gently, later with considerable force, syringed through the cavity. Should the water return perfectly clear, even after repeated flushing, the cannula can be removed and no harm results. The author emphasizes repeated flushing; in one case he used over a pint of water before obtaining a trace of pus, but finally washed out a pus cast of the cavity, the presence of which had caused a marked edema of the eyelids on that side. When pus is present, however, he does not remove it at once, but reintroduces the trocar, withdraws the cannula, slips a drainage-tube over the trocar till it penetrates the cavity, and, withdrawing the trocar, completes the washing of the sinus by syringing through a long silver tube which accurately fits the permanent tube. If pus is now obtained, the tube has been correctly placed. The antrum being thoroughly cleansed, air is blown through to dry it, and then an antiseptic powder is insufflated. The operation, including cocainization and treatment, takes but eight minutes, and few complain of any pain. The physician should treat the case for the first few days until the nose becomes accustomed to the tube; later the patient can learn in a minute to pass the wash-tube and cleanse the cavity for himself.

Before undertaking any operation on the antrum, its position should be determined by grasping the three points forming the antral triangle—the thumb in the canine fossa, the first finger on the malar process, and the second finger on the edge of the orbit. Within these boundaries must lie the antrum; and, knowing this, one can hardly go astray.

The set of instruments necessary for this operation consists of a trocar and cannula, silver drainage-tube, and a mallet; for irrigating the cavity, a wash-tube, syringe, and rubber tube with connections. The drainage-tube may readily be cut down to fit the case. The cannula is steel, as softer metal splits in penetrating thick bone. The wash-tube goes nearly through the drainage-tube in order to free it of any accumulations.

Among the many advantages of this operation are: (1) the ready acquiescence of the patient; (2) the celerity and the slight degree of pain with which it is done; (3) the completion in one short seance of the diagnosis by lavage and the operation for therapeutic purposes; (4) the small wound, and the loss of only a few drops of blood; (5) the ease with which patients are able to treat the cavity themselves; and (6) the fact that total anesthesia, and therefore assistants, are unnecessary.

The disadvantage is that the cure is delayed beyond that reported for some of the other antral operations; but when once healed these cases do not seem to have the reported tendency to recur. With larger tubes the cases have done better, and by employing the Friedlander dry method of treatment the outlook is most promising. The cases which have resisted treatment, and which have shown no progressive tendency to improvement under irrigation, have usually revealed some cause for the continuance of suppuration on exploring through the canine fossa. The ease with which remedies may be applied to the antrum by this method is in its favor. Iodoform is out of the question in one's private practice, and Chiari denies that it gives the positive results claimed for it by Krause, Siebenmann, and others. All operators, however, acknowledge the excellent results obtained by packing the cavity with iodoform gauze, and Chiari packs it even through the 4- to 6-Mm. opening in the alveolus, which he recommends.

In closing, a few words of caution suggest themselves. Do

not attempt to aspirate the cavity. The blood-vessels are but poorly supported, and, the normal openings being closed, the cavity may be cupped. Do not syringe with strong solutions of peroxide of hydrogen, as advised in many books. Even after the cavity has been irrigated some pus remains, and the pressure from the liberated oxygen, except with very weak solution, causes intense pain. Do not make an exploratory puncture through the alveolus where dental caries exists, or you may readily infect a healthy antrum.

OWEN (*Omaha Clinic*, vol. viii, No. 4) reports a number of cases of empyema of the maxillary sinus, and formulates the following rules for treatment: In acute cases of mild type, all that is necessary, besides the removal of the cause, is the employment of the ordinary means for managing a severe coryza.

In acute cases of a severe type, dependent upon intra-nasal disease, besides the ordinary means as suggested, efforts should be made to irrigate the sinus through the normal orifice. Failing in this, the symptoms being urgent, and ordinary means having been exhausted, an opening should be made through the wall in the inferior meatus for drainage and irrigation. In the latter instance, if from some configuration of the part it is not possible to penetrate the antrum, a small opening for drainage and irrigation should be made between the roots of the second bicuspid and first molar, if the first and second molars are sound, but if one is diseased and useless it should be drawn and the puncture made through the empty socket.

In all cases, acute or chronic, dependent upon diseased teeth, the teeth should be drawn and the antrum punctured through an empty alveolus.

In chronic cases, when the cause is in the nasal cavity, if poly-poid degeneration of the mucous membrane, caries or necrosis of the wall be not apparent, the cause should first be removed, then irrigation through the natural opening should be given a fair trial. Failing to irrigate through the natural opening, or to cure by this means after a reasonable trial, a counter-puncture should be made in the inferior meatus for drainage and irrigation. A cure not having been reached in a few weeks by this method, a large opening should be made in the canine fossa for curettage and irrigation.

In long-standing aggravated cases, where degeneration of the mucous membrane, caries or necrosis, etc., is reasonably certain, besides the removal of the cause, a large opening should be made in the canine fossa for curettage, drainage, and irrigation, and a counter-opening made into the inferior meatus. Frequent irrigations with a warm solution of boric acid should be the rule, and such other topical applications should be employed as the case may demand.

Journal of British Dental Association for March, 1896.

"ORAL HYGIENE," by William Hern, M. R. C. S., L. D. S.; read at Annual Meeting of British Dental Ass'n, at Edinburgh, August, 1895. The clean mouth (a) has the teeth bright and polished-looking—with their fissures, cervical margins and interstitial surfaces clean and free from deposit; (b) has the gum margins pale pink in color, hard, gristly, and closely applied to the necks of the teeth; (c) has little or no salivary calculus; (d) has little or no caries; (e) has the teeth free from any dark, hard deposit at the gum margins; (f) has the breath pure and inoffensive.

The unclean mouth (a) has the teeth of dull, cloudy appearance, with their fissures, cervical margins and interstitial surfaces filled and covered with a soft inspissated deposit; (b) has the gum margins reddened, tumid, soft or spongy, and standing away from the necks of the teeth; (c) has abundant caries; (d) has abundant salivary calculus; (e) has a deposit, more or less plentiful, of dark, hard, tartar-like material on the teeth at and below the gum margins; (f) has more or less pyorrhoeic discharge from the gum margins and sockets of the teeth; (g) has abundant accumulation of food particles in all degrees of fermentation between and about the teeth; (h) has the breath tainted with an offensive odor.

The measures directly preventive of decay are: (1) Regular and systematic brushing of all the surfaces of the teeth, as well as the gum margins, with the tooth brush used with a vertical, rotary *wrist* motion, night and morning. (2) A recommendation to have an alternation of two or more brushes in use at a time, and to keep them during the intervals of use freely exposed to the air. (3) The use of a simple tooth powder at least once daily. (4)

The brush to be *small*, moderately stiff, and anatomically shaped and curved. (5) A brief explanation to all patients who require it, of the chief causes of decay and the important part played by food and organisms in its cause. (6) Show the patients with the mirror the difference between the clean and unclean conditions; point out deficiencies in the use of the brush, and thus bring each patient to take an intelligent interest in his own mouth and aid the dentist in his efforts of prevention. (7) The use of an anti-septic and astringent mouth wash in some cases, especially those in which plates are worn. (8) The use of a quill toothpick for men, and the floss silk, rubber, or other strip for women and children. (9) Periodical inspection of mouth by dentist.

Indirectly preventive measures in work. The main objects of these would be to prevent any coigns of vantage for the lodgment and fermentation of food and *debris*, and to obviate inaccessible refuges for organisms. (1) *In Teeth*.—(a) By filling cavities; (b) by levelling up valleys, *e. g.*, *crevasses* of fissure. (2) *Between Teeth*.—(a) By careful countouring—this is a measure I would emphasize to the utmost of my power; (b) by *occasional* spacing; (c) by judicious extraction in overcrowded arches. (3) *Around Teeth*.—(a) By removal of salivary calculus; (b) by removal of dark deposit under the edges of the gums; (c) by treatment of the gums; (d) by accurate fitting of collars and crowns—the “tea-cosy” varieties are fruitful incubators of organisms; (e) by finishing the cervical and other edges of our fillings flush with surrounding tooth surface. (4) *Between Plates and Teeth*.—(a) By carefully fitting plates and bands; (b) by frequent removal of plates, and thorough and systematic cleansing of the plate and bands with stiff brushes and cane sticks. By dressing, crowning, levelling-down, or removal of roots and derelict remnants of teeth. By constructing all bridges and fixed mechanical appliances with free access to the tooth brush, and in such manner as not to provide favorable nooks as hiding places for organisms.

The Medical Record for March 28, 1896.

“A CASE OF EXCISION OF BOTH UPPER JAWS, OF BOTH MALARS, OF BOTH PALATINES, OF BOTH NASALS, OF BOTH INFERIOR TURBINATED, OF THE ETHMOID, OF THE VOMER, OF THE LEFT LACHRYMAL, AND OF A PORTION OF THE PTERYGOID PROCESS OF THE SPHEN-

OID, FOR THE REMOVAL OF A RECURRENT OSTEOCHONDROMA," by A. C. Bernays, A. M., M. D., M. R. C. S., Eng., Prof. of Clinical Surgery at the Marion-Sims College in St. Louis, Mo. I am about to record the most extensive surgical operation on the face that I have ever performed. The literature of surgery does not show a similar one, and I report it because it is of great interest in demonstrating the wonderful tolerance which is shown by the organism against the most severe and mutilating operations performed on the bones and tissues of the face, and also to encourage surgical interference in malignant disease in this region by this example of great relief given in a most aggravated instance.

In nearly twenty years of surgical practice I have operated on forty-one cases of tumors of the superior maxillary bones requiring total excision of this bone. In a few cases the orbital plate was left, and in some others more than the superior maxilla was removed. In three cases, including the one I am about to describe, both superior maxillaries were removed. Cases of epulis and small tumors of the alveolar process are not considered in this report. I have known some very small ones, involving nothing but the gums and the alveolar process, to give rise to enormous growths, if the primary operation was followed by a return. I desire to consider in this report the surgery of those only which necessitate extensive excisions and resections. Of the forty-one cases thirty-six were of malignant tumors, twenty were certainly carcinomata, twelve were sarcomata, and four were of such a structure that I was left in doubt after examining the sections. This was particularly the case with one tumor, a melanoma, which was remarkable for being so thoroughly infiltrated with pigment that a structure could not be made out at all in many places. Even the submaxillary glands in this case were so black and so friable when hardened that a structure could not be made out.

There were two deaths following operation, one a death upon the operating-table. In that case the tumor had pushed the eyeball entirely out of the orbit and the mass was found to extend into the cranial cavity, having grown through the horizontal plate of the ethmoid. The other was death from shock about twenty-four hours after the operation.

In these malignant cases the final results were very different. In some few there was immediate recurrence; in others a long

period of health was followed by recurrence or metastasis; in one-third, twelve cases, there was no recurrence for more than two years and these may be safely considered cured. Of the five benign tumors two were large osteomata, one a fibroma, one a cystic odontoma, and one a hyaline enchondroma. All of these made permanent recoveries.

History of the case. The patient, thirty-two years of age, married, farmer, was sent to me by his physician July 6, 1892. I sent him to the City Hospital and he was kept under observation there for eleven days before I performed the operation. There was no history in the family of any abnormal growth in any of its members. Patient had no ailment of any kind, had devoted himself to farming, had always been robust and healthy. His habits had been very good, his hygienic surroundings of the best; he drank and smoked but very little.

About April, 1891, the patient noticed an abnormal growth of the upper jaw, which growth gradually began to protrude from the mouth under the upper lip. When he first realized the seriousness of the affection the growth was about the size of a pigeon's egg. It was operated on in Kansas for the first time in June, 1891, and is said to have then been of the size of a small orange, diameter about two and a half inches. The operation had for its object simply the removal of the tumor by excision. By December, 1891, it had again reached its former size. It was removed a second time, the operation being similar to the first one. The growth began to return and in about four months had reached the size shown in the photographs, which were taken in the hospital in July, 1892. The large tumor involved nearly the whole face, including the superior maxillaries, the palate, the nose, the malars, and all the soft parts surrounding these bones. The growth was somewhat larger upon the left side than upon the right. Protruding and filling nearly the whole oral cavity was a large tumor, dense in structure, very slightly movable, and somewhat elastic, with a hard coating of dried purulent discharge.

The operation was performed July 17, 1892, in the following manner: Tracheotomy was performed below the isthmus of the thyroid gland; the patient was chloroformed thereafter by means of the Trendelenburg apparatus. A large sponge with a ligature was then pushed back over the tongue and packed into the

pharynx in order to prevent the entrance of blood into the larynx and œsophagus.

The first incision was made beginning at the right angle of the mouth and extending three inches outward and upward in the direction of the zygomaticus major muscle to the malar bone. All the tissues were then dissected away from the bones and from the tumor on the right side of the face as high as the external angle of the eyelids. The tissues of the orbit were then separated by means of a Langenbeck periosteal elevator from their attachment to the floor of the orbit. Next the diseased skin of an area of more than two square inches was removed from over the left superior maxillary bone. An incision near the left angle of the mouth, beginning in the wound of the cheek, was then made through the upper lip. The nose and the remaining skin on the right side were then separated from their attachments to the bone and the tumor. The contents of the orbit on the left side were freed from the floor of the cavity just as they had been on the right side, care being taken not to injure the eyeball.

Both malars were separated from the frontal with the strongest bone forceps, the two nasals from the frontal, and with the chisel the pterygoid process of the sphenoid was broken off. The whole mass was then rolled out over the frontal region and this extirpation or evulsion of the whole mass did not give rise to serious hemorrhage. The perpendicular laminae of the ethmoid and of the vomer, parts of the lateral masses of the ethmoid, and the lachrymal bone of the left side, were included in the mass, which was now removing by snipping off resisting spiculæ of bone and mucous membrane of the naso-pharynx. On the right side a portion of the malar and external wall of the antrum were left, because they were clearly free from the growth. All irregularities of tissue and all suspicious shreds were now trimmed off with scissors, leaving in the end a clean, enormous cavity, which was dusted with iodoform powder and temporarily packed with gauze. The flaps of Schneiderian membrane hanging down from the horizontal plate of the ethmoid and the mucous membrane of the roof of the pharynx and naso-pharynx were stitched together with fine silk sutures. The flaps of skin of the cheeks, nose and upper lip were replaced and carefully stitched together with numerous sutures.

The whole upper face cavity was now filled with iodoform gauze, the end of the strips being allowed to project through the nostrils, which formed good drain holes in the veil of skin which hung down like a mask from the forehead and orbits. The tumor which protruded from the mouth appeared to be cartilaginous. The left antrum was one solid mass of bone, which protruded into the nasal cavity and had caused displacement and erosion of the vomer and septum of the nose. The teeth were loose in their sockets and their roots were surrounded by a pulpy cartilaginous growth. The after-treatment was very troublesome. Patient was fed through a stomach tube for forty-eight hours, and after that he was fed through a pharynx tube for a long time, until he learned to eat and drink after a fashion peculiar to himself.

The patient gained rapidly in health and strength. He expressed himself as exceedingly thankful and was no doubt much pleased at the result. I think that his improvement and satisfaction were largely due to the removal of the offensive and disfiguring mass. Fig. 3 shows him to be anything but a thing of beauty and it is by far the best view that could be given of him. A profile would show a deep and "aching void" where the projection of the face ought to be.

Patient had fully recovered and left the hospital August 22d. "The wound on left cheek is open and will require a plastic operation," are the last words on the hospital record on the day of his dismissal. May 15, 1893, ten months after the operation, word was received at the hospital that "the cancer was returning."

I received several letters from the patient during the six months following his departure, in all of which he maintained that he was well and refused on account of lack of funds to return for the plastic operation. Dr. Liggett wrote me about a year after his return home that there was a recurrence and has since told me that the patient died in 1894, but I could get no further details of the termination of the case.

That this operation, formidable and mutilating as it no doubt was, conferred great benefit upon the patient and prolonged his life, will be admitted by every surgeon. Furthermore, that no "toxins" or "cancer serum" could cause the absorption of bone and cartilage will probably be admitted also by even the most

sanguine and hopeful of the promoters of the serum therapy of malignant tumor.

The International Dental Journal for March, 1896.

"DENTAL ANÆSTHESIA BY CATAPHORESIS," by William H. Rollins, Boston, Mass. Several articles have recently appeared in the dental journals on this subject. They convey the impression that this is a new thing. Now, on the contrary, it is at least thirty years old, for in 1859 Richardson extracted teeth under local anæsthesia produced by driving in medicines by the electric current. Even the use of cocaine, which is specially named in these articles, is old. Any one curious about this matter may turn to my report on dentistry in the *Boston Medical and Surgical Journal* for 1889, where he will find that McGraw used cocaine to produce anæsthesia of the dentine by cataphoresis. In fact, it will be hard at this late date to suggest any new applications of electricity in dental matters, the ground having been gone over too thoroughly.

Even bleaching teeth by electricity, which a recent writer claimed as new, has been in print since 1888. See my report on Dentistry in *Boston Medical and Surgical Journal* for that year, where it is credited to Ames. The treatment of alveolar abscess by electricity is seventeen years old, yet in the latest work on electro-therapeutics, the "International System of Electro-Therapeutics," edited by Bigelow, alveolar abscess is particularly mentioned as not a suitable subject for treatment by electricity. I expect to see the treatment of Rigg's disease and erosion by electricity rediscovered soon, as these methods have had about the usual time which I find it takes new dental ideas to diffuse themselves through the air with sufficient intensity to bring about this result.

As there is no doubt that the time is arriving when dental anæsthesia by cataphoresis will be more used than it has been, I wish to make some suggestions which are the result of long use of this agent. First, I have found by actual experience that the ordinary methods of using the street current are open to serious objections. Two dangers are also present,—risk of a short circuit and risk from return current through the ground.

The ordinary method, which physicians employ in electro-

therapeutics, for reducing the current is a compact resistance on one wire. Turn to any recent work in which resistances are figured, and see how near the binding posts are to each other and how easy it is to cut out the resistance entirely by an instrument falling in contact with them, thus exposing the patient or the operator or both to the full current, which, to say the least, is very unpleasant. Or suppose the resistance is on the neutral main, and as these mains look alike and have no labels on them this may happen, then if the operator touch any one of the several terminals of other circuits which are needed about the modern dental chair, or even if he touch a gas burner, he or his patient or both may get a severe shock. When I first began to use the street current with the ordinary form of resistance I had this experience. To avoid all these and other dangers I arrange my resistance in another way, and do not use a single resistance or a compact resistance which can be easily short circuited. On each main I place thirty lamps each of eight candle-power and in series. These two resistances are placed far apart at the top of the room where there is no possibility of a short circuit. This arrangement I call the minimum multiple resistance. On a hundred and ten volt circuit the maximum current that can pass at short circuit is four milliamperes, which is the greatest current ever needed in dental electro-therapeutics. I also have a rotary resistance of a binary form, both sides being exactly alike and each side connected with one main. This further resistance, which I call the wave-maker, reduces the current to one one-hundredth of a milliampere, but by rotating it the full current which the minimum multiple resistance can transmit may be obtained gradually, or by stopping short of half a revolution any intermediate current may be obtained. With the resistance fixed in this way it is impossible for either the patient or the operator to get a current of greater strength than twice that which he is using, a circumstance of no moment. By rotating this wave-maker by means of a small electric motor I obtain the wave-current for treating the severe cramps of the muscles of the jaws, which make long dental operations so painful to some patients. I do not know who first employed the wave-current in electro-therapeutics, but Kellogg has used it so long that it must be considered old. The point which I wish to make in this paper

is that the periodical literature ought to be more carefully read, for as it is at present every original man, unless he is a really great man, must see his ideas buried for years (unless he patents them), and then credited to some one else. This is always a little discouraging, and deprives the profession of many useful things for a number of years.

The Dental Record for March, 1896.

"HONEYCOMBED AND SYPHILITIC TEETH," by Mr. Heath, read before the Students' Society of the Dental Hospital of London. Teeth present numerous malformations, some congenital, others produced after birth. Of these malformations three are sometimes confused, which it is important to distinguish—those known as honeycombed, rickety, and syphilitic teeth, and it is on these three that I propose to touch this evening.

Under the head of honeycombed teeth we have a variety of irregular forms of tooth-structure. The commonest kind of so-called honeycombing is that in which the surface of the affected tooth presents numerous pits, with irregular yellowish enamel forming a large part of the crown. In the incisors the cutting-edge is sharp and irregular, with the pits sometimes penetrating to the dentine; while molars in a like case usually present, instead of smooth rounded cusps, sharp spinous portions of enamel sticking out abruptly from an irregular honeycombed crown surface. Examined under the microscope the tissues are seen to be deficient in quality, as well as in quantity, the dentinal tubes near the affected surface being irregular, and the enamel porous, with the brown striæ of Retzius well marked. This malformation usually affects like teeth to nearly the same extent; more often than not half the crown of the centrals, about one-third of that of the laterals, the tip of the canines, and the major part of the first molars being the seat of the disease, the bicusps in these cases escaping. This applies to both the upper and lower jaws. It may happen, however, that only the tips of the centrals are affected, in which case the laterals and canines escape, and the first molars suffer but little. Teeth are often seen with grooves and ridges alternating, sometimes one or two only, occasionally the whole crown presenting a furrowed surface. Also there occur all gradations between the typically honeycombed and the

grooved teeth, any number of rocky, ridged, spinous, and pitted forms being found. This deformity is usually confined to the permanent dentition, though honeycombing of the temporary teeth now and then occurs. The cause appears to be one acting during the time the crowns are calcifying, that is to say, during the first two or three years of life, and evidently also it is a cause that after a time ceases to act, as the later formed portions of enamel are often perfect.

Some diversity of opinion exists as to the cause of honeycombing. The three best known views are the following: (1.) That it is due to the influence of mercury. (2.) That it is caused by convulsions. (3.) That it is the result of the various exanthematous fevers.

The first theory we owe to Mr. Jonathan Hutchinson. He found the lamellar cataract, a disease never present at birth, often attacked children who had suffered from convulsions. He further noticed that a large number of such children had honeycombed teeth, and at first considered the convulsions, cataract, and honeycombing were three results of the same obscure cause. But patients were often seen with lamellar cataract whose teeth were unaffected, and others with honeycombed teeth who had merely suffered from convulsions without lamellar cataract supervening. This seemed to complicate matters until it was noticed that in most of the cases mercury in some form had been administered to combat the convulsions. Here appeared to be a clue to the mystery, and after some careful observation Mr. Hutchinson declared his belief that honeycombing was due to disturbance in the nutrition of the teeth caused by mercury administered in infancy, this malnutrition being brought about either by a definite stomatitis, or simply by the effect of the prolonged presence and influence of mercury in the system. The test teeth for this condition he considered to be the first molars. The usual form in which the drug is exhibited is that of teething powders, the majority of which contain calomel and morphia. One of the chief reasons for the harmful effect of these powders is that, being primarily sedative, the morphia soon induces sleep, which lasts for some hours, during which period the mercury has time to be absorbed into the system, as it is only when the effect of the morphia has passed off, and the child wakes, that the calomel

exercises its aperient action. In support of this theory it is noticed that many persons with honeycombing are unusually susceptible to the effects of mercury, which helps to explain why their teeth have been affected in infancy, when the teeth of others who have been similarly drugged may have escaped. Again, it is extremely difficult in diagnosing a case of honeycombing, apparently idiopathic, to be sure that the child has not had powders secretly administered by a nurse at some time or other to keep it quiet. Many, however, believe that this condition is not caused by mercury, but rather by the convulsions to prevent which the mercury was given; and it is to be remembered that hundreds of those who take plenty of mercury in infancy escape with perfect teeth. While finally there is no doubt that measles, scarlet fever, and the other exanthemata often lead to a malformation of the teeth, especially to the grooved condition already referred to, this being similar to the groove occasionally left on a nail after a temporary illness, it is possible sometimes by careful inquiry to find out that an attack of one of the eruptive fevers took place at the time the part of the tooth affected must have been calcifying. In certain cases, where the health has been alternately decidedly good and bad, the many-grooved condition may result. Other causes of honeycombing are given, such as heredity, inflammation of the preceding temporary teeth, the wrong dieting of infants, disturbance in the circulation by such things as whooping-cough and, finally, rickets.

Mr. Storer Bennett draws a distinction between honeycombed and mercurial teeth, holding that the former present an irregular worm-eaten appearance, while mercurial teeth have the tubercles of the incisors exaggerated, and the cusps of the molars pointed and standing distinctly out.

The *results* of honeycombing are a more than normal liability to caries, with a somewhat increased probability of the setting in of arrest of decay.

The *treatment* consists in smoothing down sharp projections, and filling hollows where possible, though in the case of the first molars a large number will be best treated by extraction, as the teeth cannot be relied upon to resist decay for long, and are of diminished use in mastication, owing to their usually imperfect articulation with each other.

The second class of malformed teeth we mentioned are rickety teeth. In rickety children both permanent and temporary teeth erupt late, and are prone to decay quickly and be lost. They are bluish and smooth, and though the enamel is not apparently defective, it is probably of poor quality. In shape typical rickety teeth are tapering, and often slightly notched.

Lastly, we have to take up the peculiar malformation produced on certain teeth by congenital syphilis. The attention of the profession was first drawn to this subject by Mr. Jonathan Hutchinson. In studying cases of interstitial keratitis, a disease of the cornea, of syphilitic origin usually, Mr. Hutchinson frequently noticed peculiarly shaped teeth which are now known as syphilitic, peg-shaped, or Hutchinson's teeth. If these are found of quite typical shape they are an absolute mark of congenita syphilis, so that it is a matter of extreme importance that they should not be mistaken for other teeth of unusual form.

To begin with the upper central incisors, which are the best teeth, these are often but ill-developed, and are, therefore, seen at a glance to be small and stunted. The form is characteristic, being variously described as barrel or peg-shaped, the important point being that the cutting edge is narrower than the neck of the tooth. This causes gaps between the teeth, and has the effect of making them appear farther apart than they really are.

The colour is dirty grey in bad cases, but is not found if the enamel completely covers the crown, being caused by dentine showing through in places where enamel is absent. The teeth are soft and soon wear down. The central incisors are most often affected, the canines sometimes, the laterals seldom being changed, while the first molars now and then are, presenting a characteristic dome shape, the cusps being represented by rings of enamel quite unlike the sharp spines on a honeycombed or mercurial tooth. The centrals often have their mesial borders inverted and are not always symmetrically affected—one may present the typical shape and its fellow be quite normal. Finally, there is, in the case of the incisors, a mark which often causes simple honeycombed teeth to be mistaken for syphilitic—I refer to a notch in the center of the cutting edge which is not there when the tooth is erupted, being replaced by several small serrated turbeccles. Tartar is seldom found around these teeth,

and the additional complication of honeycombing is unusual. Furthermore, the lower incisors are rarely notched or much affected.

The temporary dentition rarely suffers from congenital syphilis, though a case is recorded by Mr. Oakley Coles of a child presenting well-marked syphilitic temporary incisors.

In diagnosing these teeth, especially in noticing the notched condition, care must be taken to distinguish between syphilitic notches and notches due to honeycombing and subsequent wearing away of the cutting edge, or notches due to breakages or the use of a pipe. The last two causes, however, usually produce so symmetrical an appearance that they present little danger. The honeycombed condition, however, may give rise to confusion if the notch is the only character relied upon in forming an opinion. I have a model here of a case in point, of a boy free from any syphilitic taint, with well-marked notches on the upper centrals, due to honeycombing of their tips and wearing down.

Confirmatory symptoms of syphilis should always be obtained in doubtful cases. These are scars radiating from the angle of the mouth, a dusky skin, prominent frontal eminences, and interstitial keratitis. Also ulcers of a distinctly syphilitic origin may help in the decision.

Syphilis usually hastens eruption of the teeth, the temporary incisors being occasionally erupted at birth destitute of roots, but only in a very small percentage of cases does it produce the characteristic malformation we are considering. It is a curious fact that when ulceration of the palate occurs as a result of congenital syphilis the teeth nearly always escape.

It will be well to consider for a moment how the form of the syphilitic incisor is produced. If a newly-erupted normal central be taken it will present three tubercles at its cutting edge, often emphasized by two grooves running longitudinally towards the neck. The crown thus appears to be made up of three denticles. If, during the development of the tooth, the central denticle is stunted and imperfectly developed, especially its first-formed portion, we shall get a falling together of the two outer denticles, producing the typical peg-shaped tooth, while the rudimentary tip of the central denticle will quickly wear away, leaving a notch, and this appears to be a true explanation of the deformity. The

reason the whole tooth is below the normal in size is that syphilis acts upon the tooth continuously from its earliest germ, whereas mercury has a definite action for a defined space of time upon teeth perfect up to birth.

Syphilis acts by disturbing the vascular supply of the pulp, and shows its chief effects upon the dentine, while mercury expends its force on the enamel, and, in cases where syphilis is complicated with mercury, may prevent the formation of the typically syphilitic shape.

The Dental Cosmos for March, 1896.

"TREATMENT OF TEETH AND ROOTS PREPARATORY FOR CROWNING," by J. W. Heckler, D. D. S., Buffalo, N. Y.; read before the Eighth Dist. Dental Society of N. Y. State, Dec. 31, 1895. I have divided the cases to be treated into classes. First. We will take up teeth to be devitalized. I claim that ninety per cent. of teeth to be used for abutments in bridging should be devitalized.

My reasons for this are as follows:—First. It saves the patient an immense amount of pain in grinding the end and sides down. Second. Often the pulp receives enough shock and irritation to produce congestion sufficient to stop circulation. Then death of the pulp is the final result. Third. It is almost out of the question to grind a living tooth to the desired shape. When grinding down a living tooth we grind to the extent the patient permits, not always as we want it. Hence my recommendation to devitalize for anchorage in bridge-work.

The operation of devitalization can be done in an almost painless way by drilling only through the enamel-wall, making the application of arsenious acid next to the dentine, and sealing it over with wax. I do this by placing a small bit of wax in the cavity and over the arsenious acid, heating a blunt instrument and thrusting it into the wax, when it will be melted and adhere to the walls, and hermetically seal it in place. I leave this application in from one to three days to suit the convenience of myself and patient, when it will be found that the pulp-chamber can be opened with very little or no pain.

After the first application of arsenious acid the operator is enabled to grind the tooth to any extent he may desire to fit the band for the crown, when he can take the impression of the case

and go on making the crown while the roots are getting into proper condition for filling.

Often this one application is found ample for the destruction of the pulp; but if, according to the operator's judgment, it is not, make the second application directly to the pulp, seal it over as in the first instance, and leave as long as your judgment dictates,—say from twelve to twenty-four hours,—when I am quite sure the pulp can be removed without pain.

After the thorough removal of the pulp and fragments comes the medicinal treatment. For such treatment I recommend washing out the chamber and canals with absolute alcohol; this accomplishes two very important things. First. It washes out the remaining fragments and blood-clots, and tends to act as an astringent, stopping the oozing of blood-serum from the foramen.

Second. Alcohol, having a great affinity for water, absorbs the water in the canals, and by evaporating it leaves the walls in a perfectly dry condition, a condition desired by those who believe in immediate root-filling, but in a condition I desire for further treatment. For this I recommend and use nothing but the essential oils, such as the oils of cassia, eucalyptus, etc., probably more of the cassia on account of its pleasant taste and odor as compared with the others, except in cases of front teeth, when I desire to retain the original color. The oil of cassia is liable to discolor slightly. I make this dressing by saturating a shred of cotton with the oil and carrying it to the bottom of the canal with a smooth broach.

It might be well to tell how to make a perfectly smooth broach, one that will not pull the cotton out after it is carried to place, as I deem it important that the dressing should be packed against the apex. I take an old broach or piece of piano-wire the desired length, put two sand-paper disks, grit side together, in the mandrel, and place the broach between them, and grind it to as fine a point as I like, finishing with cuttle-fish disks.

Getting back to the subject again. The dressing I leave in from twelve to twenty-four hours, and even longer. At the next engagement I invariably fill the roots, deeming further treatment unnecessary. On this occasion it is highly essential to adjust the rubber-dam, especially for filling the roots of the inferior teeth. After the dam has been adjusted so as to keep out all saliva, then

—and not till then—remove the dressing from the roots and wash again with alcohol, and evaporate it with hot air from the chip-blower, or, better yet, a hot-air syringe. After the thorough evaporation of the alcohol, the roots should again be wiped out with essential oil, and forced by heated air into the body of the tooth. It has been proven by Dr. Harlan and others that the oil penetratès every portion of the tooth-structure save the enamel.

Stop for a moment to see what takes place when we remove the pulp from its bony abode with its numerous attachments. We have a great amount of tearing of tissues, as you know the odontoblasts form the skin of the pulp, and their wavy tails penetrate the dentine through the tubuli and anastomose very freely on the periphery. This being a fact, it is readily seen that some of the odontoblasts are left clinging to the walls of the pulp-chamber and root-canals, while some of them are pulled out, as it were, by the roots. The question now arises, what is to be done with these odontoblasts that are left on the walls and the fibrilli in the tubuli?

The treatment is that which I have described. It extracts its watery portion and embalms the animal. Next, by bathing the walls with essential oil before pumping chloro-percha into the canal, it promotes capillary attraction and prevents the chloro-percha from hardening and rolling up and not adhering to the walls. This being done, we are ready to insert the keystone,—the gutta-percha cone. This I do by heating a blunt instrument of the required size, sticking it into the base of the cone, and allowing it to cool and harden before pressing the cone home. I force this cone in as far as possible, absorbing with bibulous paper the fluid portion that has been forced out by the cone, and soften that portion of the cone which remains above the mouth of the canal by hot air and force it into the root with a blunt instrument about the size of the opening. Then I take a bur of a fair size and shave off the surplus gutta-percha, leaving the root entirely corked up.

Next we will consider teeth and roots with dead pulps. In these cases too much care cannot be used in handling. Nothing short of years of experience will enable the operator to thoroughly master them, as almost every case has to be treated differently, but there can be some general rules laid down by which we may be governed.

The first treatment should be the chiseling and burring away sufficiently to admit of perfect and free access to the root-canals. Sometimes we find it exceedingly difficult to gain entrance to these canals, but if you bore out a little at the mouth you will cut through a small stricture, when entrance will be gained without further trouble.

On gaining an entrance, one should use only the finest pulp-canal cleanser, as a large one would prove too much of a piston. Do not attempt to remove any of the putrescent pulp by wiping the canal with cotton on a broach, as nothing could be worse. The operator can, by careful manipulation, pass down between the pulp and the walls of the canal.

After the pulp has been removed I use a dressing of cotton, packed very loosely, saturated with a solution of bichlorid of mercury, 1-1000 or 1-1500, and leave this dressing in from twelve to twenty-four hours, unless a complication arises from some of the pulp being pushed through the apical foramen, when it will be necessary to remove all dressing to give free vent. Sometimes we have trouble from gases forming, also the accumulation of serum caused by the enlarged and congested capillaries, when it is necessary to apply counter-irritants.

In either of the above cases it might be well to pack the cotton so loosely that the canal acts only as a drainage-tube. After the complications have been controlled I find by experience two treatments to be ample.

For the first, use the cotton dressing saturated with bichlorid. This drug destroys the life of the germs, and at the same time tends to render them inert matter. I know of only one objection to the use of bichlorid: it is a slight coagulant, but I believe this can be partly if not wholly overcome by the addition of acetic acid.

For the second, use the dressing of essential oil and fill the roots in the foregoing manner.

I would like to discourage the use of some drugs in the treatment of pathological cases, especially the use of carbolic acid or any of the escharotics after devitalization, pyrozone, or any drug that is an effervescent. Carbolic acid only coagulates the albuminous fragments left in the pulp-canals, and is something that should be avoided; if it is used as a germicide it only coagulates

his coat and probably keeps him in a dormant state until such time as the condition and surroundings are favorable, when he will again put forth new life and be as mischievous as ever; besides, it is extremely difficult to use carbolic acid without burning the patient's mouth more or less. Pyrozone or any drug that effervesces should not be used in a putrescent case or blind abscess.

Gases expand equally in all directions. By pumping an effervescent into a root-canal partially filled with a putrescent pulp, expansion takes place immediately, and some of the putrid matter is forced through the apical foramen by pressure of the piston used to insert the pyrozone.

If there should be a serous sac partially filled with pus on the end of the root, and should the operator pump a sufficient quantity through this sac, he will cause the patient more pain than he is likely to get forgiveness for in this world.

THE PENETRATION OF MICROBES INTO THE BLOOD.—M. Nocard reported at a recent meeting of the Society of Biology, Paris, experiments by which he has been able to demonstrate that microbes are capable of entering the blood through the alimentary canal. He found that, while the blood is usually sterile after an ordinary meal, a few microbes being found in the blood, after a meal containing a considerable quantity of fat, microbes were found very abundant. His theory is that microbes are conveyed into the blood by the small fat globules, which are taken up by the lacteals.—*Druggists' Circular*.

THE DIET OF CHILDREN.—Soft-boiled eggs are as nutritious as any meat, and far more acceptable to young stomachs. Eggs and apples were the beginning and end of a Roman dinner in the good old frugal times of the republican era, and together with brown bread and a cup of fresh milk should form the principal ingredients of a schoolboy's fare. The word "apple" may, however, be taken as a generic term for any kind of ripe, palatable fruit, as "bread" for any sort of farinaceous preparation. Zenophon, in the chatty chronicle of his Asiatic Campaigns, mentions a tribe of Bithynian hill-dwellers, whose children were "as thick almost as they were long," and explains that the youngsters were fed on boiled chestnuts. Cornbread, with an admixture of fat, often achieves results which arrowroot specialists cannot hope to approach, and a Boston patriot was perhaps right in tracing certain triumphs of physical education to the favorite dish of his native town. Baked beans, instead of oatmeal porridge, and pears, peaches, and grapes as an alternative of baked apples, may forestall the complaint of monotony, till the youngster has reached the age of confirmed dietetic habits, which often precedes the term of his college education by half-a-dozen years.—*The Child-Study Monthly*.

Letters.

NEW YORK LETTER.

NEW YORK, April 18, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—Again, Pyorrhea Alveolaris, yes and more coming at the May meeting of New York State. Prof. Peirce is gouty still. Dr. — suggests it may be the pulp, but Dr. Burchard says not. He says something else to which we can listen with profit, viz., that the articulative tissues of the teeth, because this happens to be the weak point, a *locus minoris resistentiae*, have so much of the “resistibility” that you see none of the weak points, and they go through all the scourges untouched to old age.

Some things ought to be italicized and kept in mind as pointers; first is mal-nutrition, this admits of a lesion, for without it none could occur; next, the *locus minoris resistentiae*; next, thoroughness in removing deposits, that was emphasized by the first and has led to the modern attention to this disorder. No doubt we all agree with Dr. Younger, that the essential thing is to remove all deposits.

Dr. Talbot raises the possibility of doubt whether or not they are irritating, which seems a little funny. Dr. Truman emphasizes “his treatment that he gave to the profession long ago,” which is, essentially, the use of sulphate of quinine. While it is an astringent and may act upon the gum tissues, to our mind it is constitutional treatment direct, the system gets the tonic effect and we believe that is the true value of its use.

Dr. Burchard says one thing which we desire to notice—simply removing calcareous deposits does not cure the disease, nor does constitutional treatment, they simply make the arrest more secure. Dr. Truman says he cured a case in his mouth, and that it will never come back. The history and treatment would add much in these days of investigation.

It will be watched with much interest how Dr. Williams will cover Prof. Heitzman’s invented or applied theory that the ameloblasts break up into “embryonal corpuscles.” Williams

says, "It would be plausible if it had any foundation in fact." Will that (thrust) be parried? Dr. Williams is a man from Maine, the home of the "Plumed Knight." Well, this fight is all over the cadaver, but it is arousing a decidedly fresh interest, for books have been written. Oh! that all the enemies would write a book. The late Dr. Atkinson always rejoiced "that he never did write a book."

The First District Society has taken Hart again for another year with his former associates. The Dwinelle clinic will demonstrate bleaching by cataphoresis; something *new* in the treatment of phorrhæa; and anesthesia of the lower lip following treatment of chronic abscess.

The Odontological Society will be favored with "Mistakes," by S. G. Perry, and it will be a mistake if he does not interest, according to his usual custom. Our mistakes are the best things that come to us, if we see a lesson of profit by them.

Special, for the 24th, at the Academy of Medicine, Prof. Morton, of the New York Post Graduate School, will give, under the auspices of the Odontological, a lecture on "The X Ray and its Application in Dentistry," demonstrated with apparatus and lantern slides. This is a forward move for a dental society, but why not? It is a popular move for emphasizing dentistry. The "X" Committee has Walker on it this year and it has rais(ed) a great many interesting things.

Mr. R. S. Williams died Wednesday night of this week from heart failure, caused by overwork. He was a very worthy man and had the respect of all those with whom he came in contact.

Everything is big in New York, and nothing more so than "Greater New York." Ice has gone up here and the mercury is racing after it—result, great heat in April, with indications of a *dry* season, consequently, great depression of spirits.

Cordially, NEW YORK.

IODINE AS AN ANTISEPTIC.—At a meeting of the German Naturalists and Physicians, Herr Soeb, of Aix-la-Chapelle, read a paper in which he alluded to two classes of iodine preparations. Most of those in use belong to the first, in which free iodine is given off in the system and iodoform poisoning is caused in this way. Nosophen belongs to the second class; it forms with albumen an iodine combination which has a bactericidal action, and is again decomposed, leaving the system in its original form.—*Brit. Jour. Dent. Sc.*

The Dental Digest.

PUBLISHED THE

TWENTIETH DAY OF EVERY MONTH.

Editorial.

THE RECENT DISCUSSIONS ON PYORRHOEA ALVEOLARIS.

Looking for light on this unconquered and, as yet, not understood disease, we have been more confused than enlightened. The most of the papers thus far read and discussed throw but little light on the subject, and we should say had generally a tendency to confuse the reader, rather than to help him. The prominent point in most of them seems to be an attempt to show that the uric acid theory is incorrect. To an honest observer, looking for aid on the subject, there is much to bewilder and little to assist. For instance, take the discussion of Dr. Talbot's paper, read before the Academy of Stomatology, at Philadelphia. There were about as many theories and methods of treatment as speakers; pyorrhoea could be cured by removing the deposit or by not removing; some claimed that nearly all cases could be cured, others that there was no cure except the forceps.

The question arises, how far are we justified in assuring a patient suffering from the disease that his case is curable? If the tooth is comparatively firm in the socket, we should say it is fair to entertain a reasonable hope of preserving it for some time with proper treatment. But when a case presents itself where pressure on the grinding or cutting edge of the tooth forces it some distance back into the socket, and upon removal of pressure the tooth drops back again, there is no living person who can cure such a case. In these cases, we might say invariably, the end of the root is denuded of periosteum. Even where such teeth can be made absolutely free from deposits and held firmly by metal bands, their loss is sure to follow, and they are even less likely to be retained by tying with silk ligatures and attempting to hold

in place until new bony tissue can form around them. Therefore, treatment of such cases is only a torture and useless expense to the patient and a waste of time to the operator, who should be able to employ his time in a more useful way.

In the treatment of hopeful cases they will improve or retrograde as the patient's physical condition changes, and we should say that constitutional treatment should accompany local.

There is another class of hopeless cases, where a deposit forms on the roots without any destruction or disturbance of the tissue around the neck of the tooth. This occurs many times near the ends of the roots of molar teeth, and sometimes between the roots. We have had a few such cases, the suffering being intense, and the only relief lay in the forceps. We are aware that some writers deny the existence of this form of the disease, they not having noticed it, but this is all the worse for their observation, as there can be no doubt that this form exists, and it is, in our opinion, the worst phase of the trouble.

THE DECISION OF THE COURT IN THE LOW BRIDGE PATENT CASE.

We publish in full below the decision given by Judge Wheeler in this case. It will be seen that the decision is quite brief, and we understand that his custom is to pick out the main points in the evidence and not go much into the details. The two prominent points are, that the invention was not patentable, as the method was wholly mechanical, and, that it had been used before it was patented. There were several other points at issue which are not discussed, such as the file wrapper contents and the title.

UNITED STATES DISTRICT COURT, EASTERN DISTRICT OF NEW
YORK.

INTERNATIONAL TOOTH CROWN CO.	} In Equity.
vs.	
ALLEN G. BENNETT.	

The bill alleges ownership by the plaintiff and infringement by the defendant of patent No. 238,940, dated March 15, 1881, and granted to James E. Low for a method of permanently fixing artificial teeth to the mouth by bands around the natural teeth, in

dentistry. The answer among other things denies knowledge, and prays strict proof of ownership; and sets up various anticipations.

At one place a certified copy from the record of an assignment in the patent office was put in evidence taken on notice, but in absence of defendant's counsel. This is objected to now as insufficient. It would have been inadmissible on objection then; and perhaps have been suppressed on motion afterwards. *American Cable Railway Co. vs New York*, 60 Fed. Rep. 1016. But as it has been left as evidence in the case its inadmissibility has been waived, and on that waiver it seems to be sufficient.

The patent was before Wallace, and Shipman, J. J., *International Tooth Crown Co. vs Richmond*, in the circuit court for the District of Connecticut, 30 Fed. Rep. 775, and sustained. Of course everything decided there is to be considered as settled here.

The method is wholly mechanical, and is said now, in view of *Ridson vs. Medart*, 158 U. S. 68 decided since, not to be patentable; and defenses of prior knowledge and use by Doctor Day and by Doctor Beardsley, not before the court then, are relied upon now.

When the method, and not the operating parts, is what is invented, that, of course, is what is to be patented. Here the natural teeth belong to the wearer, and are to be operated upon; they are not made by the inventor to operate and cannot be brought within the patent. The bands were not new in any sense alone; nor were they when combined with the artificial teeth merely; but the mode of attaching the artificial to the natural teeth permanently by the bands might have been; and if so, that was what was invented and what should be patented.

This method is thus described in the specifications:

"A band of gold or other suitable metal is first prepared and accurately fitted around the tooth adjacent to the vacant spaces to be supplied with an artificial tooth. This band is firmly secured in place by cement, which effectually excludes water or the fluids of the mouth, and is thus permanently attached to the tooth, so that it cannot be removed without an operation directly for that purpose. It is sometimes sufficient to prepare one of the adjacent teeth in this way; but generally it is desirable to prepare the ad-

jacent teeth on each side of the vacant space. It will always be advisable to do so if the vacant place is to be occupied with more than one tooth."

"The formation of the mouth and the shapes and position of the teeth are so various with different individuals that my invention may require modification in various particulars in applying it. I therefore do not propose to limit myself to the details as shown, but consider that my invention includes the permanent attachment of artificial teeth by securing them to continuous bands permanently attached to adjoining teeth supported upon natural roots, and supporting said artificial teeth by said attachments without dependence upon the gum beneath said artificial teeth."

The claims are for:

"1. The herein-described method of inserting and supporting artificial teeth, which consists in attaching said artificial teeth to continuous bands fitted and cemented to the adjoining permanent teeth, whereby said artificial teeth are supported by said permanent teeth without dependence upon the gum beneath.

2. An artificial tooth cut away at the back, so as not to present any contact with the gum except along its front lower edge, and supported by rigid attachment to one or more adjoining permanent teeth, substantially as and for the purpose set forth."

This method, as such, would be as well practiced and shown by the attachment in that way of one side of one tooth or one end of a block of teeth, to one natural tooth, as by so attaching each side of the single artificial tooth, or each side of the block to a natural tooth. The method of the attachment to a natural tooth is, by the terms of the patent, precisely the same. A band extending upwards so as to form a cap over the natural tooth would be none the less a continuing band of the patent when used as such in carrying out this method. The alleged infringement was done only by such use of such a cap. Doctor Day testifies to soldering a silver cusp to a silver band, making a cap, which was permanently attached to a natural tooth of a patient, and to which an artificial tooth was attached. This testimony is supported by that of an assistant learning the profession; that of an intimate acquaintance of the patient, and the production in evidence of the work, kept after long wear.

Doctor Beardsley testifies to making a similar cap of gold and attaching it to a natural tooth of a patient, wife of a clergyman, and to attaching at first an artificial tooth at one side of the cap, and afterwards another on the other side, which were worn, and gave satisfaction, several years. In this he is corroborated by an assistant, also learning the profession, and by the patient, her two daughters, and one of her Sunday-school scholars. There is nothing so improbable about this testimony, which is left wholly undisputed, as to leave any fair doubt as to the occurrences, or their date, both of which preceded Low's invention. The method of either seems to be the method of the patent, and either seems to have well anticipated it.

Let a decree be entered dismissing the bill.

HOYT H. WHEELER.

JAMES C. CHAPIN, }
EDWIN H. BROWN, } for plaintiff.

CHARLES K. OFFIELD, for defendant.

Notices.

SOUTH DAKOTA BOARD DENTAL EXAMINERS.

The South Dakota State Board of Dental Examiners will meet Wednesday, June 3, 1896, at the Cataract House, Sioux Falls, for the examination of candidates for licenses, and for the transaction of other business.

W. H. H. BROWN, Sec'y.

SOUTH DAKOTA STATE DENTAL SOCIETY.

The South Dakota State Dental Society will meet at Sioux Falls, S. D., on the first Wednesday in June, 1896.

The State Board of Examiners will also meet at the same time and place.

Dr. F. E. FIELD, Acting Sec'y.

THE CHICAGO DENTAL SOCIETY.

The following officers for 1896-97 were elected at the annual meeting, April 7th, 1896,—Pres., Louis Ottofy; First Vice Pres., J. E. Hinkins; Second Vice Pres., H. A. Costner; Rec. Sec'y., A. H. Peck; Cor. Sec'y., Geo. B. Perry; Treas., E. D. Swain; Librarian, H. A. Gunther; Member Board of Directors, G. H. Cushing; Board of Censors, G. T. Carpenter, B. D. Wikoff, G. W. Schwartz.

THE TEXAS DENTAL ASSOCIATION.

This association will hold its annual meeting this year in Waco. The session convenes Tuesday, May 12th, and continues three days. Realizing the

importance of practical demonstrations, the Association has always striven to make this feature prominent, and especial effort has been made this year in that direction. A committee on clinics, appointed at the last meeting, has secured a large number of clinicians, who will be ready to demonstrate almost everything of interest to the profession. In addition to this, a number of papers have been promised. Furthermore, it is expected that the presence of several practitioners of note outside the state will be secured, so that altogether the meeting will prove one of unusual interest. It is earnestly desired that every legal practitioner in the State, who holds his profession in sufficient esteem to aid in its advancement, will attend this meeting and unite with us in its upbuilding.

J. G. FIFE, Sec'y., Dallas, Texas.

OHIO COLLEGE OF DENTAL SURGERY.

The memorial exercises to Dr. James Taylor, founder of the College, were held April 16th, 1896, at the fiftieth anniversary of the Ohio College of Dental Surgery. The program:—Music; Invocation, Rev. A. A. C. Taylor; Address, Dr. A. W. Harlan, for the Alumni Association; Address, Dr. Jas. J. Taylor, for the Board of Trustees; Address, Dr. Jonathan Taft; Music; Address, Dr. P. S. Cassidy, for the Faculty; Voluntary Remarks; Music.

CHICAGO COLLEGE OF DENTAL SURGERY.

The fourteenth annual commencement was held Tuesday, April 7th, 1896, at the Schiller Theatre, Chicago. The program was:—Music; Invocation, Wm. M. Lawrence, D. D.; Music; Annual Report, Dr. A. W. Harlan, Secretary; Music; Conferring of Degrees, Dr. Truman W. Brophy, President of the College; Music; Class Valedictory, Dr. W. H. G. Logan; Music; Doctorate Address, Dr. C. N. Johnson; Music; Address, John J. Halsey, M. A., Acting President of the University.

News Summary.

TO KEEP THE HANDS CLEAN.—In the warm days that are now before us, when a rubber glove cannot be worn with comfort while engaged in prosthetic work, an anointment of honey for the hands will subserve the same purpose. It holds the dirt in suspension and dissolves very quickly when immersed in water, leaving the hands soft and clean.

Take clarified honey and rose-water, of each one pint, Listerine two ounces. Mix and bottle. For winter use, add two or three ounces of glycerine.

GIGANTIC TOOTHACHE POSSIBILITIES.—The tooth of a mastodon, in an almost complete state of preservation, has been recently unearthed. The mastodon must have been sixteen feet high and thirty feet long, and, if a male, its tusks must have been from eleven to twelve feet long, and from the appearance of the tooth an extremely old animal, probably 150 years of age. The tooth weighed 14 lbs. 12 oz., and measured ten inches by six, and is of the

purest ivory. It was worn down to the quick with the nerve exposed, and a naturalist to whom it was given was of the opinion that the animal must have suffered untold agony for years from toothache.—*Brit. Jour. Dent. Sc.*

THE NOSE AS A MICROBE DESTROYER.—According to some recent experiments there are in each particular pint of air which the adult takes in with inspiration about 15,000 microbes. In some localities, to be sure, this number reaches up to the million, but the average city number is about as stated. This microbe-laden air is taken into the air passages. When the air is thrown out it is quite sterile. The air has further been found to be sterile in the nasopharyngeal cavity. The inference is, therefore, that the nose is a most powerful microbe destroyer, and also that, in order to destroy the individual 15,000 microbes, it is important to draw the air through the nasal passages.—*Medical Record.*

CAUSES OF DEATHS.—According to the census of 1890 (*Maryland Medical Journal*, Aug. 17, 1895), of every 10,000 deaths in the United States 1 will be from calculus, 35 due to Bright's disease, 40 to fevers other than typhoid, 50 to rheumatism, 70 to scrofula, 130 to cancer, 140 to apoplexy, 145 to whooping cough, 160 to dysentery, 190 to meningitis, 220 to scarlatina, 246 to ague, 250 to convulsions, 310 to typhoid fever, 350 to heart trouble, 480 to diphtheria, 880 to diarrhea, and 1422 to phthisis. Of this number 2210 are from typhoid, diphtheria and phthisis, all of which are preventable, and if we take in whooping cough, dysentery, scarlet fever and diarrhea, we shall have more than one-third of all deaths at the present time from preventable causes.

ADENOID VEGETATIONS OF THE NASO-PHARYNX.—Arslau, of Padua, concluded, after extended clinical study, that adenoid vegetations of the nasopharynx occur frequently in Italy. The primary causes are heredity and dyscrasic diseases, the secondary causes humidity and infectious processes. He employs the Moritz-Schmidt incision, followed by scraping with the finger. As an anæsthetic he finds ethyl bromide preferable. In all cases where adenoid vegetation is detected it should be removed, and all children should be subjected to a naso-pharyngeal examination before being admitted to public or private schools or other institutions.—*Ann. d. Lalad. de l' Oreille, du Larynx, etc.*, 1895, No. 10.

SOME GENERAL STATISTICS.—The 72 races inhabiting the world communicate with each other in 3,024 different tongues, and confess to about 1,000 religions. The number of men and women is very nearly equal, the average longevity of both sexes being only thirty-eight years, about one-third of the population dying before the age of seventeen. Moreover, according to the most careful computation, only 1 person in 100,000 of both sexes attains the age of one hundred years, and only 6 to 7 in 100 the age of sixty. The total population of the earth is estimated at about 1,200 million souls, of whom 35,214,000 die annually—*i. e.*, an average of 98,848 a day, 4,020 an hour, and 67 a minute.

The annual number of births, on the other hand, is estimated at 36,792,000--*i. e.*, an average of 100,800 a day, 4,200 an hour, and 70 a minute.

Generally, taking the entire world, married people live longer than single, and those who have to work hard for their living longer than those who do not, while also the average rate of longevity is higher among civilized than uncivilized races. Further, people of large physique live longer than those of small, but those of middle size beat both.—*Medical Record*.

A CURIOUS ACCIDENT.—A "broken nose" is not an uncommon occurrence, but that the whole upper jaw should be separated from skull is worthy of record. Mr. Hopkins reports a case admitted into the Swansea Hospital. A man, aged forty-nine, was struck by a wooden beam on the back of the head; he was knocked forward against a coal-truck, so that the edge caught him at the root of the nose. The nasal and zygomatic processes were fractured, the superior maxillary bones were detached, and there was separation in the middle line of more than an inch. The frontal sinus and anterior ethmoidal cells were opened up, but the eyes were quite uninjured. The parts were kept in very good position by using Smith's gag, which was worn continuously for a fortnight.—*Brit. Jour. Dent. Sc.*

SHOULD ONE SLEEP AFTER EATING?—We would not now revert to this oft-discussed question to give any one's theoretical views or personal beliefs in the matter, or to bring forward the familiar argument that because animals sleep just after they have eaten, hence the human animal should do the same. Dr. Schule, of Fribourg (*La Med. Mod.*, January 15, 1896), has, however, approached the subject from the chemico-experimental side and his results are worthy of record. Having analyzed the stomach's contents in two normal subjects a few hours after meals, some of which were followed by sleep and others not, he finds that sleep has for its constant effect the weakening of the stomach's motility and at the same time there is an increase in the acidity of the gastric juice. On the other hand, simple repose in the horizontal position stimulates the motive function of the stomach but does not increase the acidity of the gastric juice. The conclusion is hence reached that, while one should stretch himself out for a rest in the horizontal decubitus after a hearty meal, he should resist the tempting Morpheus, especially if there be present a dilated state of the stomach or if its juices be hyperacid.—*Medical Record*.

Obituary.

RESOLUTIONS BY THE NEW YORK ODONTOLOGICAL SOCIETY.

The rapid years have gathered one more of the great men of our profession to his final rest.

Dr. Wm. H. Dwinelle, whose life we commemorate, and whose death we mourn, was one of the great figures in the early days of our young profession.

He was born in Cazenovia, N. Y., where he died at the Homestead on Feb. 13, 1896, 76 years of age.

Entering our profession at a time when it was struggling for recognition among the learned professions, he brought to it the influence of a remarkable personality, and through his varied attainments, and by his energy and hopeful confidence he helped, as few others did, to place it upon a secure foundation among the learned and liberal professions of the world.

Fitted for the practice of medicine and surgery, he yet saw in the specialty of dentistry a wider field for the exercise of his peculiar genius, and he entered upon his work with boundless enthusiasm. This is shown by his numerous inventions, his brilliant operations, and his contributions to the professional literature of his time. It is also warmly attested by the few surviving companions of those early days.

He assisted in the formation of the first Dental College, and was instrumental in establishing the *American Journal of Dental Science*—one of the most dignified and influential journals our profession has produced.

He performed surgical operations in the oral cavity that were the admiration of the general surgeons of the day, and he performed operations upon the teeth that had never been before attempted. Many examples of his work are still in existence to testify to his remarkable ingenuity and to his unusual skill.

A man of warm heart and generous impulses, he freely gave to all who came; his office was always open, and he was ever ready to show his instruments and his methods to any one who desired to learn.

Having practiced medicine and surgery before he entered the dental profession, he commanded the confidence of physicians and surgeons, and was thereby able to help in an unusual degree to secure recognition for our specialty, and he stood for many years as a bond between the parent profession and its young offspring.

A man of literary tastes and a devoted lover of art in all its forms, he was able to reflect credit upon our profession at a time when such influences were more needed than at present.

A man of tender sensibilities, he was a genial companion, and his wide sympathies and varied talents made him a great favorite among cultured people.

He was a man of so many gifts that he could have been a poet, an actor, an artist, a sculptor, or a literateur; this wide range of talent made him always an agreeable friend.

Before the bar he would have been a great advocate; in the medical profession he would have been a great physician or a great surgeon.

He chose to be a great dentist.

For this we honor his memory, and we think it fitting that this Society, once presided over by him, should place on record its appreciation of him while living and its sorrow for his death.

A. R. STARR,
WM. JARVIE,
S. G. PERRY, Chairman.

The Dental Digest.

Vol. II.

CHICAGO, MAY, 1896.

No. 5.

Original Contributions.

IS IT NOT A BLOT ON THE PROFESSION?

BY GEO. H. CUSHING, D. D. S., CHICAGO.

In the March number of the DIGEST is a criticism of a communication entitled "A Blot on the Profession," in which the writer lays great stress on the fault so prevalent in the profession, of basing grave charges upon the unsupported statements of patients.

This is a very just criticism in a general sense, but has no application here.

In the cases cited the patients had not "discarded their former dentists." They were temporarily sojourning away from home, and having need for treatment during their absence from home, received such as seemed necessary at the time. They had no complaint to make of their regular advisers, but evidently had the fullest confidence in and admiration for them, and nothing was said that could in the slightest degree reflect upon their regular dentists, to whom they probably returned with unabated confidence.

The writer of the original article has a grave appreciation of the fault referred to, and is perhaps as careful in coming to conclusions based upon the mere statements of patients as is his critic.

With regard to text-books, the original article said, "few of the text-books treat this subject with the *fullness its importance demands*." Now this must necessarily be a matter of individual opinion, and while the books may be entirely satisfactory to the critic, "they do not treat the subject with the fullness its importance demands," in the judgment of a great many others.

With reference to the fear expressed "that this phase of operative dentistry was not sufficiently or thoroughly taught in our schools," the writer formed his judgment upon the unqualified statements to that effect made to him by teachers in the operative department of several colleges.

Now whether it be "a blot on the profession" or not, the facts remain as stated in the original paper—that "the operations for the removal of calcareous deposits are many times entirely ignored, or, when undertaken, are frequently imperfectly and slightly performed," and, "that the evidence of this has been a matter of observation for many years by those who have given proper and earnest attention to the subject."

It is quite evident that the critic must have been very fortunate in the class of patients coming to him from other dentists, or that he does not observe these cases as a great many members of the profession do.

AMALGAM AND ITS MANIPULATION.

BY J. N. CROUSE, D. D. S., CHICAGO.

Aside from the imperfections of manufacture of the ingredients of amalgam, and the methods of compounding them, there is another barrier to its success which I am inclined to think is not appreciated, and that is, the difficulty of packing it in a perfect manner in the cavity.

When Dr. Black described the difficulty he had in making a perfect filling in a steel cup, I did not understand what he meant; but when I began to experiment to ascertain what combination of materials would make the best amalgam, and attempted to fill cavities in some of the same kind of steel cups, then I realized to what he referred. Fillings that I was sure would show perfect edges, so far as the manipulation was concerned, showed many imperfections under the microscope, and with the greatest care defective edges would occur.

Repeating the experiments many times only strengthened my belief that the most difficult problem in the amalgam question is, how to pack it into the cavities perfectly. If, with an amalgam which when tested by a micrometer neither expands nor contracts,

I could not always make a perfect filling in a cavity in a steel die, what must be the percentage of failures of amalgam fillings in the mouth, remembering the many inaccessible places in which it is used, and often without the same care that is given to gold.

Where the great difficulty in making perfect fillings lies, is not altogether clear in my mind, in fact, it is a mystery to me, and I wish to make a plea here to every earnest practitioner to make some fillings out of the mouth, place them under a magnifier, and then see if his surprise is not as great as mine was. For I apprehend that the conceit will be taken out of many operators to an extent not dreamed of. If, however, they can make perfect fillings each time, will they please state, for the benefit of the readers of the *DIGEST*, what is their method of manipulation?

I am inclined to think that pressure used on one portion of a large amalgam filling, while packing it, should be very light, as heavy pressure on one part springs or bends the amalgam away from another part where it may pass unobserved. If this theory is correct, the filling will surely be disturbed many times by the occluding tooth striking it before it has hardened.

The removal of the rubber-dam, unless extreme care is exercised, will cause a shifting of some portions of the mass, owing to the tendency of amalgam to bend or spring, and thus unsuspectedly make defective edges.

The chances are, that the use of a matrix would be more beneficial for this material than for any other, and it should not be removed until the amalgam is hard.

I do not claim that I have solved the problem by any means, but simply throw out a few hints for confirmation or disapproval by the experiments of others. Feeling sure that we have more nearly solved the problem of the manufacture than of the manipulation of amalgam, I have written this article more with a view of getting the co-operation and assistance of logical practitioners, who will prove each step, than of attempting to throw much light on this difficult question.

FOR SICKNESS FOLLOWING THE ADMINISTRATION OF CHLOROFORM.—Lewin finds that a linen cloth steeped in vinegar placed over the face of the patient and allowed to remain for at least three hours will prevent the sickness following the administration of chloroform.—*Rev. de Chir.*, September, 1895.

CONCERNING DISCUSSIONS ON THE COLLEGES.

BY W. H. DUDDY, D. D. S., BOSTON, MASS.

This appears to be an age of reform in all the walks of life, but the reader of history discovers the fact that many of the so-called reforms in past times have been undertaken under different names. At regular periods these reform movements spring into life and are developed by a popular wave of agitation that sweeps through the land. The idea of this agitation and discussion has been repeatedly scoffed at by those who take no interest in the affairs associated with our daily lives. Nevertheless, no great reform has ever been completed, no important question decided, no advancement of the human race accomplished, without these questions having the search light of investigation turned upon them by serious and determined men.

This contagion of reform has apparently reached the threshold of our dental colleges, or at least the articles in the dental journals relative to the deficiency of some colleges would so indicate. While it is a comparatively easy matter to formulate a plan for conducting a college, it is much more difficult to carry out that plan. Any plan, to be successful, must be one that will permit slow and gradual changes to be made in the college curriculum, for a radical change is seldom a salutary one.

We have heard a great deal of complaint and criticism about the manner of conducting our colleges and the course of study pursued in them. There is a class of dentists who are opposed to the teaching of any branches not directly germane to dentistry, but they are mostly the older practitioners who have not kept pace with the rapid strides made in dental science. There is another class who go to the other extreme and lay great stress upon the desirability of students acquiring as much or more knowledge of the medical than of the dental art. Fortunately there is a happy mean between these two ideas, and that consists in the student acquiring as much knowledge as possible in the dental and a fair instruction in the allied medical studies.

It has frequently been remarked that the examination for admission is not rigid enough, and that too many students enter who are incapable. While this may be true, it is difficult to avoid it. Either the colleges must have an iron-clad rule, requiring a cer-

tain percentage in all studies, or else they must permit applicants who fall a little short of the standard, but who have a reasonable knowledge of the studies required, to enter the college at their own risk. If the first plan be adopted, there would be a large reduction in the number of students and a consequent diminution of revenue. The second plan, which seems to be in vogue at the present time, is manifestly more just, as it gives to everyone, except the very ignorant, a chance to better himself.

Regarding that phase of the question which relates to "sacrificing the practical to the theoretical side of dentistry," I heartily endorse every thought expressed by Dr. G. Carleton Brown in his paper in the February number of the *DIGEST*. When the colleges permit students to matriculate, they enter into a contract and virtually agree to do all in their power to make them proficient in the art and science of dentistry. Thus guaranteeing a certain degree of proficiency, if the graduates are unable to perform with any degree of assurance the ordinary dental operations, the colleges not only do great injustice to the students, but also force them to impose upon all who come under their care.

While the colleges have not reached perfection in the art of teaching, they have certainly improved greatly, and we should not forget that each improvement is the result of earnest effort on the part of their faculties. I do not wish to be understood as wholly defending the colleges, nor as severely criticising them, but simply as endeavoring to look at all sides of the question. It is too broad a one to be satisfactorily settled by any individual, but discussion will aid in its solution.

TREATMENT OF CERTAIN TUMORS IN THE MOUTH WITH CHLORATE OF POTASH.—Dumontpallier recommends this treatment in high terms, as he has been very successful with it in his practice. He applies it, finely pulverized, to the tumor four times a day, and administers it internally also, in a solution of 4 grams to 120 grams of water. He ascribes its beneficial effect to the fact that it passes into the secretions of the salivary glands, and thus keeps the tumor under its influence all the time. This treatment must be continued two or three months and the kidneys must be kept in good order. All sources of irritation from the teeth must be carefully exterminated. Before resorting to the bistoury he urges this treatment to be tried in almost all cases.—*Bulletin Med.*, March 11.

TO REPAIR BROKEN RUBBER PLATES.

BY C. H. WEST, D. D. S., FARINA, ILL.

If it be a lower plate, fill a lower impression cup with softened modeling compound and, after placing the broken parts perfectly together, carefully embed the teeth downwards in it. With a large engine bur now cut out the crack from the inside, or maxillary side of the plate, to the teeth, and nearly to the lingual and labial surfaces. Then with a hot spatula spread new rubber over the fresh surfaces, which will adhere to them, and the space can be thoroughly packed a little more than even with the surrounding surfaces. Now carefully run model in the plate and over the freshly packed rubber, separate the compound from teeth, bur out, pack the lingual and labial surfaces the same way, and it is all ready to flask and vulcanize, without having to open, and all of the break has been burred out and filled with fresh rubber. After vulcanizing, the surplus rubber in the maxillary groove can be cut out even with the surrounding surfaces.

Upper plates are treated on the same principle—burring out, packing the maxillary and labial surfaces before running the model, after which bur the lingual surfaces to a feather edge posteriorly from the teeth, pack rubber with a hot spatula, flask and vulcanize. This plan saves opening flasks, washing out wax, etc., and the expansion of the soft rubber during the process of vulcanizing fills every open space and makes a very satisfactory job with a very little trouble.

To replace a broken tooth or a block of teeth, cut out from the lingual surface with a file or large bur, under where the broken piece was, until the pins of the new tooth or block do not strike the plate. Fit the new piece to place, wax it up, and flask and vulcanize as above described.

HÆMOSTATICS IN HÆMOPHILICS.—Dr. H. C. Howard, of Champaign, Ill. (*American Jour. of Surg. and Gyn.*), has for twenty years used hypodermic injection of a saturated solution of tannic acid around the seat of bleeding. Dissolve the acid by aid of heat. Make from three to six injections around the seat of the injury, using a saturated solution as hot as can be stood. Also inject hypodermically one-twentieth of a grain of strychnine and repeat every two hours if needed. Strychnine by its influence upon the vasomotor nerves usually checks bleeding in a short time, but when the amount of blood lost is considerable it is best to adopt the above method of local treatment.

Digests.

The Dental Cosmos for April, 1896.

"GUAIACOCAIN CATAPHORESIS AND LOCAL ANESTHESIA, OUTFIT AND TECHNIQUE," by Wm. James Morton, M.D., New York City. So many inquiries have been addressed to me asking for information as to methods of procedure, that I gladly take the opportunity to answer them collectively through these columns.

Source of Current.—The "continuous" or "constant" electric current, whether obtained from the street mains or from any reliable battery, is the current required in cataphoric procedures. Alternating and pulsating currents are not practically available. The "Edison current," 110 volts, as in common use, requires a controlling device. The best is the "Wheeler Fractional Volt Selector." For controlling street main currents of a higher voltage than 110, special devices must be obtained.

As to a battery, a portable "red acid cell" of twenty cells, or any form of Leclanche cell, say thirty cells, or any other good battery, will answer every purpose.

Electrodes.—These, devised and invented by the writer, are an "indifferent" or "dispersing" electrode and "active" electrodes. The small dispersing electrode is a circular disk of carbon, three inches in diameter, covered with two layers of sheet punk or amadou, bound at the edges by an insulated wire pressing into a groove. This is large enough for use in cases of anesthetization of the gums or of sensitive dentine. For large areas of skin a larger dispersing pad electrode, say 6 x 6 inches, should be procured.

The active electrodes vary in shape according to the purpose to which they are put, but retain the special device of perforations to hold solution, etc. For the skin flat single plates of carbon or block tin of circular shape suffice. For the mouth in general a flat electrode resembling a mouth-mirror is convenient.

For the gums, for use in extraction, implantation, etc., the electrode is made tong-shaped and unlike any electrode of this shape formerly constructed; *both* plates are of the *same* polarity.

The carbon, or block tin, in the active electrodes is one-fourth of an inch thick, is perforated freely to about two-thirds of its depth by drill holes one millimeter in diameter, or is perforated completely, and a shallow reservoir provided behind it to hold an excess of solution. The body of the electrode is of ebonite, raised two to three millimeters at the edges of the plates to form a cup into which is inserted a piece of soft and porous blotting-paper cut to fit exactly, or a soft piece of felt or other absorbent material.

For sensitive dentine the active electrode is a small stiff piece of platinum wire, tubular at its end, and perforated from the sides into the tube in order that it may hold an excess of the solution. Around the end of this "applicator" is wrapped a pledget of absorbent cotton.

This constitutes in the main all the electrodes necessary; modifications for special cases will suggest themselves.

Rheostat or Current Controller.—If the current from the street mains is to be used, preference has already been expressed for the "Wheeler Fractional Volt Selector." This same apparatus is equally available with a battery current. Its chief utility is in relation to sensitive dentine, where it is of highest importance that the initial voltage employed and current strength attained shall not cause pain. But in relation to the skin and mucous membrane any ordinary rheostat will answer the purpose.

Again, it is quite possible to one at all familiar with his "galvanic" battery to use the ordinary cell selector to bring into circuit a limited number of cells, thus working with a low voltage, and to regulate the flow of current from this small number of cells by aid of common water rheostats, provided that ample sponge tips break the strength of the first water contact.

An instrument like the fractional volt selector, however, saves trouble and annoyance.

Milliamperemeter.—Not only is it necessary to regulate the voltage employed, but also it is equally essential to have an instrument to record the rate of flow of the current attained. This of course varies according to the voltage, or, what is more important, according to the resistance, which in this case is tissue. This rate of flow termed "current strength" is measured in amperes, and in medical and dental work in thousandths of an ampere,

namely, milliamperes. A very small fraction of a milliampere causes pain in sensitive dentine. No reasonable idea of "dosage," nor means of comparison with other cases can be had without the record of a milliamperemeter. It is a constant guide to the administrator.

Any good milliamperemeter will suffice, but its scale should be large and easily read. An instrument recording from one up to ten milliamperes is preferable.

Solutions and Fluids.—Aqueous solutions of from four to thirty per cent. of hydrochlorate of cocain may be used. The writer, by combining guaiacol and anhydrous hydrochlorate of cocain, has found what seems to be a new compound rather than a solution. To secure uniformity of action (for some guaiacols are far more irritating than others), the solution or compound is termed *guaiacocain*. It is a ten per cent. mixture of hydrochlorate of cocain in pure guaiacol; this percentage may, if desired, be increased to thirty per cent. This solution, as above given, answers every purpose perfectly for anesthetization of dentine and of the skin, but for use upon mucous membrane it should be diluted to at least one-half, or otherwise slight and superficial destruction of tissue may ensue. I use for dilution a ten per cent. solution of cocain in glycerol, mixing it with guaiacocain in equal parts. Guaiacocain may be procured of McKesson & Robbins, New York, or at dental depots.

Technique.—Skin. Using aqueous solutions of cocain, the skin must first be thoroughly washed with soap and water. When guaiacol is employed, this is unessential.

Mucous membranes.—No preliminary preparation of the mucous membrane is required.

As to the active electrodes, the solution is *first* dropped into the perforations until they are full; the absorbent material is then fitted to the shallow ebonite cup or wrapped about the applicator, and a liberal supply of the solution dropped upon it. It is now ready for use.

The flat electrode is applied directly over the spot to be anesthetized and pressed with some firmness against it, as, for instance, over a cancrum oris of a buccal surface.

In the case of the tongs electrode, some care is requisite to secure a proper adjustment and to secure uniform action. It is well,

after the electrode is in place, to pack in absorbent cotton, not too wet with solution, to fill up inequalities of contact, or to bridge over (in certain cases) the gap between the blades.

For dentine, the cavity is first filled (a rubber-dam should be used) with a pledget of absorbent cotton dipped in the guaiacocain solution (avoiding a surplusage and yet not too dry); the applicator itself should then be dipped in the solution until it holds all it can, and a small layer of cotton be twisted about its end. During treatment the current may be turned off, possibly twice, and the pledget in the cavity be freshly dipped in the solution, or, as I prefer, by the use of my own applicator, this pledget may remain *in situ* and the fresh supply be furnished by removing and dipping the applicator itself into the solution; or, better still, a few drops of fresh solution may be from time to time dropped into the tip of the applicator by aid of a pipette, thus avoiding entirely what is certainly objectionable, and that is, any interruption of the flow of the current.

The dispersing electrode may be held in the hand, may be held by the operator upon the cheek or beneath the lower jaw, or placed upon the chest or back, or, in short, anywhere at a reasonable distance from the active electrode. The latter, the active electrode, is to constitute a positive pole, and the former a negative pole. To determine the polarity, apply a few drops of a saturated solution of iodine of potassium to a piece of paper and test the two terminals of the cords; free iodine will appear at the positive terminal and cause an iodine stain. Or test in the same manner by aid of a piece of litmus-paper wet with water; the positive terminal will turn the paper red, the negative will turn it blue.

Everything now being ready, the connections tested and polarity having been carefully determined beforehand, the current may be "turned on" most gently and gradually.

In the case of sensitive dentine, skill, carefulness, and experience are essential. The first onset of the current may at the best cause a slight burning pain. To avoid this contingency, it is well to give the solution five minutes' time to effect a superficial anesthesia prior to applying current. The applicator is adjusted, and the current, which cannot be too gradually applied, is then brought into circuit. The patient will feel a slight burn-

ing sensation, which in a moment will subside, when more current may be added. Each accretion of current during the first five minutes will cause the same sensation. Thus the treatment is followed up, step by step, consulting the patient as to the slight pain, until, in about five to seven minutes' time, it will be found that the current strength may be largely increased without causing any sensation whatever. At this time I carry the current up to from two to two and one-half milliamperes, and, after two to three minutes at this current strength, consider the dentine sufficiently benumbed to endure operative procedures without pain. A point of prime importance is to avoid movements or removal of the applicator during the current flow; for, as is well known, a "steady" current produces no reaction of motion or sensation, while a "varying" current produces these reactions most unpleasantly to the patient.

With these hints in mind and with a little experience, not only dentine, but the contents of the pulp-cavity, and even the tissues outside of the tooth, may be effectually anesthetized via the pulp-chamber. And it may be mentioned in passing, that not only may anesthetizing substances be thus employed, but also any other remedy—germicide, antiseptic, escharotic, etc.—which it is desired to apply to the tissues above named.

British Journal of Dental Science for April, 1896.

"ORAL SURGERY," by Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S. Eng. *Diseases of the Temporo-Maxillary Joint*. The temporo-maxillary articulation is liable to the same diseases that affect other joints, although not with the same absolute or relative frequency. The following are the most important affections.

Acute Non-Suppurative Arthritis.—This may result from injury, gonorrhœa, rheumatism, or syphilis. The synovial membrane is the structure most affected, the condition resembling synovitis of other joints. The chief symptoms are pain and swelling in the region of the joint and inability to open the mouth. The pain may radiate to the ear or temporal region. The masseters and temporal muscles are contracted and hard. After two or three weeks the acute symptoms subside and the joint may return to its normal condition, or may remain more or less stiff from the formation of adhesions inside or outside the synovial cavity.

Treatment.—The cause of the joint disease must be treated with suitable remedies, and the joint must be kept at rest by the application of an elastic bandage. The food should be entirely fluid, so that mastication may be suspended. After the acute symptoms have subsided an effort should be made to prevent the adhesion by the use of counter-irritation over the joint, by passive movement of the jaw and massage.

Acute Suppurative Arthritis.—This condition may be due to a wound of the joint, or it may occur in the course of pyæmia, scarlet fever or measles; in these cases the trouble starts in the joint itself. In other cases suppuration may extend to the joint from neighboring parts, such as the ramus of the jaw or the middle ear; in the latter case the pus finds its way into the joint through the Glaserian fissure.

The symptoms are in the first instance the same as those of non-suppurative arthritis, but on the advent of suppuration the local symptoms become greatly intensified, and are attended by febrile disturbance. The pus has but little tendency to reach the surface, being bound down by firm fibrous structures; it is prone to burrow deeply and may find its way into the ear through the Glaserian fissure, into the skull through the floor of the glenoid cavity, or amongst the tissues of the neck, causing in some cases thrombosis of the internal jugular vein. The most important point in the *treatment* is to evacuate the pus as soon as possible by the use of the knife.

Rheumatoid Arthritis.—Rheumatoid arthritis of the temporo-maxillary joint presents very similar features to those observed in other joints. It may attack young subjects, especially delicate females, or persons over fifty who are already suffering from the disease in other parts. It may affect one or both sides.

The structures composing the joint are greatly changed. The cartilages become worn away, leaving the articular surfaces of the bone uncovered. The inter-articular fibro-cartilage often disappears entirely quite early in the course of the disease. The articular surface of the condyle becomes flattened and worn away, and is usually roughened; it is only rarely that it displays the eburnated or porcellanous appearance so often seen in other joints. The neck of the condyle becomes absorbed, so that in some cases the mandible may look almost as if its condyle had

been taken off with a saw. In some cases the condyle becomes greatly hypertrophied, causing the symphysis to deviate towards the opposite side of the face; it is thought by some that this condition, although usually the result of rheumatoid arthritis, may sometimes occur in persons who are otherwise healthy. The glenoid cavity is often enlarged, encroaching upon the eminentia articularis; its depth is usually diminished by an irregular deposit of bone, and its surface is denuded of cartilaginous covering. No marked changes in the synovial membrane or ligaments have been observed or recorded.

The symptoms are pain and creaking on movement, stiffness of the joint, some general fullness, and in rare cases, when the condyle is enlarged, marked deformity. In the later stages of the disease, movement of the joint may be so restricted that the patient can only open the mouth to a very limited extent, and is quite unable to masticate food. *Treatment* is very unsatisfactory, the disease being in most cases incurable. Relief may sometimes be obtained by the use of small repeated blisters, hot sponging, keeping the joint covered so as to protect it from cold, and the frequent use of passive movements by means of a screw gag; very little force must be used, or more harm than good will be done. When movement is greatly restricted the condyle may be excised (see Fixity from Ankylosis).

Tubercular Arthritis.—Tubercular disease of the temporo-maxillary joint is a very rare affection. It resembles tubercular disease of other joints. The synovial membrane becomes thickened and succulent, the cartilages eroded, and the articular surfaces carious or necrosed. Complete bony ankylosis may ensue.

The treatment consists in the prolonged use of rest and constitutional remedies. Should these means fail, the diseased structures must be thoroughly removed by operation.

Fixity of the Mandible.—Inability to open the mouth may be due to three conditions, viz., spasm of the muscles of mastication, ankylosis of the temporo-maxillary articulation, and cicatrices between the two jaws.

Fixity from Spasm.—Spasm of the muscles of mastication may be due to some affection of the central nervous system, such as tetanus; in such cases the closure of the mouth is of no impor-

tance as compared with the disease of which it is a symptom. In women it may be due to hysteria.

The most frequent cause is some inflammatory trouble in the neighborhood of the mandible or temporo-maxillary joint, such as mumps, inflammation of the lymphatic glands or impaction of a lower wisdom tooth. It not unfrequently happens that, owing to want of room between the ramus of the jaw and the second molar tooth, or the malposition of the wisdom tooth, the latter is unable to erupt; the pressure which it exerts upon neighboring parts produces a reflex tonic spasm of the masseter and internal pterygoid muscles. As a rule the spasm subsides as soon as the source of irritation is removed, but in some cases the inflammatory condition arising around the tooth spreads to the adjacent muscles, setting up a myositis which may result in permanent contraction.

Spasmodic closure due to an impacted wisdom tooth is most common about the age of twenty, but may occur in much older persons, in whom eruption of this tooth has been delayed. Spasmodic closure may last a long time (in one recorded case as long as two years) and may be immediately relieved by removing the cause of irritation.

Treatment.—The mouth must be opened by means of a screw gag, whilst the patient is under the influence of chloroform. The wisdom tooth should then be extracted, or the second molar should be removed so as to allow room for it to erupt.

Fixity from Ankylosis.—Inflammatory affections of the temporo-maxillary joint may lead to a varying degree of stiffness or impaired movement. The stiffness may depend upon adhesions outside the joint, fibrous ankylosis of the articular surfaces, or in more severe cases (especially those following upon suppurative arthritis), actual bony ankylosis. If the stiffness is dependent upon fibrous adhesions, a certain amount of movement is obtainable either by the voluntary effort of the patient or by the use of the screw gag when the patient is under the influence of chloroform. In cases of osseous ankylosis the jaw is absolutely fixed.

Treatment.—In recent cases of stiffness from external adhesions or from fibrous ankylosis, an attempt may be made to restore movement by the forcible use of the screw gag. It is, however, but seldom that any permanent benefit results. Should this meth-

od of treatment fail, two other courses are open to the surgeon, viz., subcutaneous division of the adhesions and excision of the condyle.

The division of adhesions is performed by passing a very narrow tenotomy knife into the joint immediately in front of the temporal artery and carrying it freely round the condyle, completely dividing the external lateral ligament, and partially the insertion of the external pterygoid muscle. The depth of the incision must be carefully measured to avoid wounding the middle meningeal artery. The immediate result of the operation is very good, but relapse is very likely to ensue.

The most satisfactory treatment is excision of the condyle. This may be effected through the mouth, as practiced by Dr. Meads, but it is best done from without by the following method. An incision $1\frac{1}{2}$ inches long is made along the lower border of the zygoma. The parotid gland and branches of the facial nerve being drawn down, the masseter fibres are cleared away from their insertion, and the joint exposed. The neck of the condyle is then divided with a saw, trephine or chisel, the condyle turned out with an elevator, and the attachment of the external pterygoid muscle severed. The fibro-cartilage is left behind. After the operation the mouth should be opened at least an inch, and this proceeding must be repeated at frequent intervals so as to prevent the tendency to relapse.

Fixity from Cicatrices.—Cicatrices binding the two jaws together may result from ulcerative or gangrenous stomatitis, mercurialism, necrosis, alveolar abscess, compound fractures, lacerated wounds, and surgical operations upon the face or jaws.

The constricting bands may be limited to the mucous membrane, or may involve the tissues of the cheek, being attached to the bone and forming a firm bond of union between the two jaws. In a few cases the two jaws have been united by a buttress of bone, or the coronoid process has been found glued to the inside of the zygoma as the result of osteoplastic periostitis.

Treatment.—Attempts to stretch the cicatrices by mechanical means are not often successful, and the division of bands inside the mouth are usually futile. Attempts to cover the wounds, made by excision of scars, with flaps of mucous membrane or skin are "difficult, bloody, and disappointing." The best result is

obtained by performing Esmarch's operation. This consists in removing a wedge-shaped piece of the jaw, so as to form a false joint in front of the cicatrix. An incision two inches long is made along the lower border of the jaw in front of the masseter and cicatrices. A triangular wedge of bone is then removed with a narrow-bladed saw or bone forceps. The wedge should measure $1\frac{1}{4}$ inch below and $\frac{3}{4}$ inch above, its apex corresponding to an edentulous gap in the alveolar border if possible. Passive movements should be employed early and persisted in until there is no tendency to relapse.

When only one side of the mouth is affected this operation restores the power of mastication as well as that of opening the mouth; when it is necessary to operate on both sides the function of mastication is necessarily lost, although in this respect the patient is no worse off than before the operation.

"THE TREATMENT OF PULPLESS TEETH," by Mr. Storey, read before the National Dental Hospital Students' Society. When treating teeth, the pulps of which have lost their vitality, we have to consider not only their actual condition, but also the state of health and constitution of the patient, for it is evident that the periodontal membrane of a healthy person will have a greater amount of vital resistance than that of an anaemic or weak person. The same principles of treatment should be applied to a tooth with a gangrenous pulp as a surgeon would apply to a similar condition in any other part of the body: removing all the putrescent matter and sterilizing with some germicide. Thorough aseptic methods of treatment should be adopted; barbs and nerve extractors should be kept perfectly aseptic, and a new bur should always be used when making a fistulous opening through the alveolus.

Pulpless teeth may be divided into two classes: (1) Those in which the pulps have been removed by devitalization or extirpation; (2) Those in which the pulps are already dead. The treatment of teeth of the first class is usually fairly easy, there being no serious subsequent inflammation, provided proper aseptic precautions have been taken. The rubber-dam should always be adjusted, and the cavity in the tooth enlarged until the pulp cavity is easy of access. The pulp chamber should then be opened up,

freely with a rose bur, so that there are no overhanging edges left. If the canal be then syringed out with cold water, it will be found that by passing a Donaldson's bristle, or a nerve extractor, to the apex of the canal, and then twisting it, the pulp can nearly always be removed whole. It is not necessary to ream out the canals, because wherever you can pass a Donaldson it is possible to introduce your filling material; the canal should then be thoroughly cleansed out with chloroform, thoroughly dried and filled. No germicide is needed, provided that all the instruments used were in an aseptic condition, since arsenic, one of the most powerful antiseptics, being used to devitalize the pulp, the tooth is in the most aseptic condition possible. Oxychloride of zinc is perhaps the best filling material for these teeth, especially if the tooth be in front of the mouth, on account of the facility of reaching the canals, because there is very rarely any subsequent trouble from these teeth.

Class 2. Those in which the pulps are already dead are more difficult to treat, and more uncertain when treated, than when the pulp has been devitalized. As a rule the root canals will be found filled with septic matter, which may or may not have made its way through the apical foramen, causing inflammation and an alveolar abscess. The rubber dam having been adjusted, and the decomposed pulp removed by a Donaldson bristle or nerve barbs, the canal should be syringed out with a very strong solution of caustic potash or a solution of permanganate of potash, and then be reamed out as much as possible, to remove the layer of putrefying dentine. Great care should be taken during this operation not to force any septic matter through the apical foramen. The canal must be thoroughly sterilized with bichloride of mercury, 1-500 solution, or peroxide of hydrogen, or a 1 per cent. solution of arsenious acid in glycerine. This should be allowed to stay in the canal, renewing at intervals until the cotton, on being removed, has no smell of putrefaction. The canal must then be thoroughly dried, first by passing cotton soaked in alcohol into it, and then by means of a hot air syringe. Too great stress cannot be laid on the fact that the canal should be thoroughly dried, for it is well known that no micro-organisms can exist without moisture. It should then be filled, and preferably with gutta-percha, as it can at any time be removed, if necessary, by the use of a hot instrument.

There are some dead teeth in which the pulp is shrivelled and free from the results of decomposition. They require no more attention than the removal of the contents of the canals, and filling, taking care that no moisture enters the canal.

The following are some of the drugs used in the treatment of pulpless teeth:—*Bichloride of Mercury* is one of the strongest germicides known, and on account of its rapid, certain, and preservative action, it is indicated when immediate root-filling is practised. In teeth where the dental foramen is large the 1 in 500 solution should be used cautiously, and the 1 in 200 solution should be used only in root canals whose foramina are small, as it contains the minimum dose of the salt in 10 drops.

Arsenious Acid is another most powerful antiseptic. Teeth whose pulps are in a putrefying condition may be treated without removing the putrescent matter in the canals. The pulp cavity is cleaned out, but not the roots, and dressing of carbolic acid is then put in the roots for a few minutes. A piece of card, dipped in oil of cloves, is then taken, and 1-20 of a grain of arsenic is put on and placed face down over the root canal. A metal cap is put on this and the tooth filled permanently. I think this was the first step towards the immediate method.

Carbolic Acid is a very powerful antiseptic, but whilst it subdues offensive odor, it does not completely arrest the activity of free bacteria. It coagulates albumen. It is useful in the treatment of alveolar abscess.

Creosote is not a germicide or disinfectant at all, and therefore it cannot be used instead of carbolic acid or vice versa. It does not coagulate albumen. It forms a stimulating application to suppurating surfaces.

Iodoform as an antiseptic possesses many good qualities, but as a dressing its powerful odor is rather a disadvantage, the odor of the septic gas being covered. It may be dissolved in any of the essential oils, preferably eucalyptus. These together form antiseptics of a powerful and permanent kind, and cause no irritation. Iodoform combined with wax is also used as a permanent filling material, but if once the canal is made thoroughly aseptic no further antiseptics are needed.

Peroxide of Hydrogen is a very useful germicide, especially for front teeth, as, it being a powerful and oxidizing agent, it does

not discolor them. The presence of pus can be determined by the energetic bubbling which occurs when it is used. An ethereal solution of peroxide of hydrogen, 30 vol. strength (with a little alcohol), is very useful, as it does not readily decompose.

The Buffalo Medical Journal for April, 1896.

"DISEASES OF NOSE AND THROAT," reprinted from *Journal of Laryngology, Rhinology and Otology*, reported by H. J. Mulford, M. D. Adenoid Vegetations. In a paper read last year Dr. Y. Arslan, of Padua, states his conclusions as to etiology and treatment of "adenoids," after having seen over four hundred cases. Among 4,080 patients suffering from affections of the nose, throat or ear, 426 had adenoid tumors in the vault. Of these 69 per cent. had symptoms of nasal obstruction, 37 per cent. suffered with tonsilitis or pharyngitis, 59 per cent. had ear complications, of whom 110 were cases of suppurative otitis, and 142 were cases of deafness without suppuration. Of six deaf mutes with adenoids two were benefitted by their removal. Other complications noted were Bronchitis, laryngeal spasm, night terrors, stammering, nocturnal enuresis and convulsive attacks. A case of Jacksonian epilepsy, thought to be of central origin, soon disappeared after operation.

Much importance is attributed to heredity and general diseases as causes. In sixty cases noted traces of heredity. Dampness and other causes of secondary importance.

Treatment consists in complete removal. Advisable to operate even when the masses are small. The operation should be completed at one sitting. As regards direct complications, the operation is certain in its benefits; for reflex complications the result is not so positive. Disappearance does not always take place with age, for the growths were found in patients ranging from twenty to forty years.

General narcosis should be employed, otherwise a simple operation is made complicated, long and brutal, especially as the majority of our patients are children, in whom we cannot expect complete docility. Cocain insufficient. Of the anesthetics prefers ethyl bromide; superior to chloroform or ether for short operations. It is rapid and certain in its action, harmless in the dose employed (10 to 20 grammes), and leaves no disagreeable

consequences. Gas might do as well, but not so handy. Collected 4,161 cases of anesthesia by ethyl bromide, in which some unsuccessful cases were noted, but not one death. Has used it 252 times without seeing the least disagreeable symptom. It should be given by what is called the intensive method. Up to fifteen years 10 grammes are enough, above that age the dose may be doubled.

Prognosis good. Nasal obstruction disappears. The healing of suppurating otitis, unless there is extensive caries, is hastened. In deafness without suppuration, nearly always rapid recovery of hearing. In adults, secondary lesions of tympanum and ossicles may be unchanged. In deaf mutes, when young, good results may follow. Often in reflex complications unexpected and brilliant results may be obtained.

"THE CIGARETTE HABIT," by Dr. Mulhall, read before American Laryngological Association, reprinted from same journal. Chewers, smokers and snuff-takers each derive a special satisfaction from the use of tobacco. Cigarette smokers, from habit of inhaling, derive more pleasure than cigar or pipe smokers. The smoke does not penetrate into pulmonary structure beyond the first division of the bronchi. The smoker used to certain degrees of satisfaction does not find it in either a milder or stronger cigarette or in a cigar. The feeling experienced is a pleasurable irritation of the laryngeal and tracheal fibers of pneumogastric nerve. It is a nicotine satisfaction.

Amount of nicotine absorption varies according to the extent of surface, which in inhalers is three times that of noninhalers. Three cigarettes have the nicotine strength of one cigar, and there is no reliable evidence to prove that cigarettes are adulterated with opium or other deleterious drugs. Cigarette smoking is a "deadly" habit, because of its frequency. Its effects are analogous to those of giving a drug in small and frequent doses.

The constitutional effects are those from tobacco in any form, always nicotinism. On the young the results are most pernicious. Locally it may aggravate preexisting trouble, but it rarely originates any disease. There may result a slight hyperemia of the mucosa, or a slight catarrh, with pearly secretion ejected in small pellets with a single slight cough. Once in a while a whistling

râle is heard over the bronchi, but only in the case of deep and excessive inhalers.

Mario, the great tenor, inhaled constantly and between the acts of the opera. Maxwell, the St. Louis murderer, while in prison inhaled forty cigarettes daily, and although he was a nervous wreck his throat did not show signs of disease, as was proven post mortem.

Discussion. Dr. Ingals could not accept the doctrine that tobacco did no harm to the throat, as he had seen pronounced tracheal cough in inhalers.

Dr. Seiler thought the habit of continual spitting was the real cause of the local trouble, as this led to abnormal dryness of the pharynx.

Dr. Langmaid believed that he could tell by the color of the mucosa of pharynx if a man smoked or not. Cigars have less effect on throat than pipe, owing to the heat in the stem of the latter and to the relatively larger mass of fire in the bowl. Effect of tobacco in any form on the young was especially destructive to power of consecutive thought. As to Mario, it was notorious that he really never exerted his vocal powers more than once a week; the rest of the time he intoned. As a general thing tobacco is very deleterious to finer qualities of the singing voice.

The Therapeutic Gazette for April, 1896.

"ON THE PHARMACOLOGY OF ETHYL BROMIDE," reprinted from *Medical Chronicle*. Hennicke, working under Dreser's direction, found that after white rats had been allowed to inhale air containing 2.3 per cent. of ethyl bromide for twenty-two to thirty minutes, death occurred during the night, although apparent normal recovery had followed the inhalation. Furthermore, a case of ethyl-bromide intoxication had been described by Jendritza. A domestic, eighteen years old, was anesthetized by this substance for tooth-extraction. After the operation recovery quickly followed; neither the dentist nor (after her return) her employers noticed anything amiss; but later in the day she was found unconscious, with fixed, moderately dilated pupils and locked jaws; sensibility was absent, but respiration was easy and the pulse full and regular. Ice was applied to the head, and attempts were made to rouse her, which succeeded after an hour and a half. Speech was not recovered until half an hour later.

Dreser, thinking that these ill-effects were probably due to retention of ethyl bromide in the body, perhaps in connection with the nerve cells, and the formation of decomposition products as a result of the normal metabolic changes occurring in the cells, instituted a series of experiments to determine if possible if this were the case. The most feasible explanation was a saponification of the ethyl bromide by the alkaline tissue-juices. He therefore submitted a 0.25-per-cent. solution of sodium carbonate saturated with ethyl bromide to a temperature of 36° C. for six hours. On examining the product he found a trace of bromide present in an inorganic form. He then submitted a number of rabbits to ethyl-bromide inhalations and examined the urine; in all cases, with one exception, he found a definite quantity of combined bromide present. One of the animals, which was emaciated, died one hour after the commencement of the experiment, and the time therefore was, in all probability, too short for any excretion of bromine to occur. In man also he constantly found bromine in the urine after anesthetizing with ethyl bromide. He therefore regards it as proved that the injurious effects of ethyl-bromide inhalations are due to retention of the compound in the body; this decomposes, resulting in the formation of compounds having a more toxic effect than the ethyl-bromide itself.

Journal of American Medical Association for April, 1896.

"RELAPSING SORE TONGUE." Mr. Jonathan Hutchinson presented to his post-graduate class a case of the above named affection, as reported in the *Medical Press* for February 26. There were large abraded patches upon the surface of the organ, and these resembled a severe attack of herpes. Herpes of the tongue occurred chiefly along the margin and tip; herpes of the tip was exceedingly common. Sometimes these attacks supervened with such frequency that the patients were scarcely ever free from them. The history of the present case was that the disease had persisted off and on for twenty years. At intervals the tongue would be quite sound, but after some months a relapse would occur. The present attack, which had lasted for four months, was the most severe which the patient could remember. On examination of her teeth, one tooth was seen in which an amalgam stopping had been used. Mr. Hutchinson here remarked that he

entertained great prejudice against amalgam stoppings in teeth, especially in mouths which were sore. In such cases he always insisted upon the amalgam being removed and gold inserted in its place. Dentists, he stated, would not believe that any harm arose from amalgam stoppings. But he was satisfied that in certain conditions some chemic solution of the amalgam took place. Most often the tongue became sore opposite the tooth in which the amalgam was present. Moreover, he had often found that patients could tell by means of a slight metallic taste in their mouths which tooth it was in which the amalgam had been placed. Again, he had often seen cases of sore mouth where all the symptoms had been relieved by replacing the amalgam with gold stopping. The peculiar condition of the patient's mouth was most interesting. In some respects the leucophakia somewhat resembled that seen in smoker's tongue, but more inflammation was present than was usually observed in the latter condition. It was worthy of note that the filiform papillæ had disappeared over a large area. The patient, on being asked if any particular articles of diet caused irritation to her tongue, replied that anything "sharp" did so, and in this connection she instanced vinegar. She also avoided walnuts. Mr. Hutchinson was interested to find that she had herself discovered the irritating effect of walnuts. He pointed out that walnuts were especially harmful in these cases. The old, dry walnuts were possibly not much to be blamed in this connection, but the juice of the rind of the young, moist walnuts was especially irritating. He had seen many cases of sore mouths arising from this cause. Again, such patients should avoid all effervescing waters, and sugar in combination with vegetable acids was very harmful. The remedy for these cases was arsenic.

The International Dental Journal for April, 1896.

"SUGGESTIONS ON THE USE OF ELECTRICAL OSMOSIS IN DENTAL PRACTICE," by Peter Brown, L. D. S., Montreal, Canada. One source of power which is very much in use by dentists to-day is the ordinary 110 lighting circuit; this is a very satisfactory means of running a dental engine or a mallet, but it is far from satisfactory for the treatment under consideration. It is open to quite a few objections. Prominent among them is the unevenness of the

voltage; for the delicate nature of the application in treating sensitive dentine a perfectly even pressure of current is absolutely necessary. This evenness is impossible to obtain on the ordinary light or power circuit, owing to the varying demands made upon the generators from time to time during the day. A difference in potential of five per cent. may not be of much importance to the central station supplying the circuit, but it is of great importance to the patient who is being treated by it. From a large number of experiments made by the writer it has been proved that a difference in pressure of one-fifth of a volt is immediately felt by the patient, and very often it is painfully felt; this shows the necessity of a steady current. Another objection is that there is great danger from wires of a higher pressure falling across, or otherwise coming in contact with, the line supplying the dentist; this has happened more than once, and very often with unpleasant results. The fact of having a resistance in the circuit will not afford protection from accidents of this kind, as the sudden increase of pressure will overcome the resistance in use at the time, and force more current through than is required before additional resistance can be added. The danger of high-pressure circuits may be avoided by reducing the voltage with what is known as a rotary transformer. The type known as the motor-dynamo should not be used, as there is a danger here from leakage from the high-pressure side of the machine to the low-pressure, which is the one to be used in treatment; a one-hundred-and-ten-volt circuit may be reduced by connecting a one-hundred-and-ten-volt motor by means of a belt to a dynamo wound to give a current of twenty volts. The current from this could then be led to the chair, and used without the slightest fear of shock. This plan is, however, open to the objection of varying pressures, as when the voltage of the main line would drop there would be a drop in speed of the motor and a corresponding drop in the voltage of the dynamo. In the writer's experience, the most satisfactory and most reliable source of power for this work is the storage-battery. Where one can obtain the one-hundred-and-ten-volt circuit there is very little or no trouble in operating it; when it is received from the manufacturers it is charged, ready for use, and it may be connected with the one-hundred-and-ten-volt circuit with a sixteen candle-power lamp in series with it for resistance; as in sketch, a double

pole-switch should be put in between the line and the lamp, and always opened when the battery is in use. Here we have a safe and reliable supply of energy always at our command, and always at an even pressure. The battery is kept charged by the lighting circuit, and requires but very little attention. A battery of ten cells should be employed, so as to have a potential of twenty volts; this is all the voltage necessary for this work, and is not very often required. Ten volts will be found quite sufficient for the majority of cases, but it is advisable to have an extra pressure in case of patients who have a very high resistance. Where the direct current is not available the battery can be charged at the nearest lighting station, and one charge should last a dentist for cataphoric treatment at least six months; where it is not desirable to go to the expense of buying a storage battery the ordinary Le Clanche cell of the type used for operating the telephone would answer the purpose very well, or the bichromate of soda cell makes a good battery, but they are more troublesome than the storage cell.

The next thing to consider is the means of reducing the current so that it can be tolerated by the tooth under treatment. This is accomplished by placing a rheostat in series with the battery and patient. The most compact and reliable form of resistance is one called the "Williams dry current-controller." This will give a resistance of one hundred thousand ohms on a ten-volt circuit, thus giving about the one-tenth of a milliampere on the first contact. A milliampere meter is not necessary, but is very useful for purposes of record, and for assuring one that the current is on when the contacts are made. A voltmeter is also very useful for recording the pressure, but both of these instruments can be dispensed with. Where a galvanometer and voltmeter are used, instruments recording in tenths or twentieths should be employed. It is of great importance that the contact with the tooth should be firm, and not removed until the operation is completed, as any break in the circuit when the current is on is accompanied by quite a severe shock; before removing the contact from the tooth the current should be reduced by the rheostat to its zero point. A very good method of obtaining good contact with the tooth is to solder or otherwise attach to a rubber-dam clamp a piece of brass wire. To the end of this wire

a piece of platinum should be soldered, as no metal but platinum should be used in contact with the tooth. In applying the clamp the tooth to which it is to be attached should be insulated by a piece of rubber dam. Take, for instance, a cavity in a central incisor, median approximal; after cutting away the walls sufficiently to gain free access to the cavity, the rubber dam being applied, the cavity should be wiped dry, and lightly swabbed out with a two-per-cent. solution of sulphuric acid. Before applying the acid the adjoining tooth and the edges of the cavity under treatment should be coated with a layer of sandarach or copal varnish; then apply to the cavity a pledget of cotton saturated with a forty-per-cent. solution of cocaine in water. A bicuspid clamp, with wire attached, is then fixed to the first bicuspid, and the end of the wire placed against the cotton. The wire should be bent so as to make a good firm contact with the cotton; of course, it is to be understood here that the clamp is outside the rubber dam and insulated from the tooth by the dam. The positive wire is then attached to the clamp, and the negative placed in the hand of the patient; the current is then turned on slowly until the patient gives evidence that it is being felt. It should be allowed to remain this way for about three minutes, when the current may be increased. In ten minutes the tooth should be insusceptible to pain, although the writer has had cases where forty minutes were necessary to obtund the dentine, but these cases are exceptional. In operating, where there are other fillings in the same tooth, and where these fillings are liable to be touched in preparing the cavity, a coating of varnish should be put on so as to insulate them.

Where it is desirable to remove the pulp, the following method may be used: Prepare the tooth and cavity as before mentioned, but cover the exposed pulp with sticking-plaster or other suitable substance; then place the cotton containing the cocaine in the cavity and apply the current as before. In ten minutes the current may be turned off, and the cotton removed, and the covering taken from the pulp.

Another application may be then placed in the cavity in direct contact with the pulp, and the current again applied. In ten or fifteen minutes the pulp can be removed without any pain, and the root immediately filled. In all these operations the cotton con-

taining the solution should be moistened every four or five minutes, as when the water evaporates the current does not pass through, and time is wasted. A drop of water may be added with a small syringe or applied with a piece of cotton without removing the wire from the cavity.

Attention is directed to the following: Always make a fresh mixture of cocaine; have one grain of cocaine weighed out and divided into six parts. In using it moisten a piece of cotton sufficient to fill the cavity to be treated, and take with this the sixth of the grain of cocaine; have the cotton sufficiently moist to dissolve the salt and you will have good results. Cocaine solutions are not to be relied upon after they are two days old.

Where the skin on the hand is dry or hard and offers high resistance, a piece of cottonoid or lintine should be wet with a solution of common salt and wrapped around the handle in the patient's hand. Or, the negative electrode may be applied to the face or neck, but this is not desirable, as it leaves quite a red spot where the contact was made, owing to the increased circulation at this part.

Care should be taken not to allow the positive wire to touch the skin or the mucous membrane at any point, as, if a connection is made at any other point besides the tooth under treatment, the positive current will enter at this place of contact and lessen the amount of current going through the tooth. In using this treatment without applying the rubber dam, the fingers should not come in contact with the mucous membrane unless the positive electrode has a well-insulated handle.

The Ohio Dental Journal for April, 1896.

"KNICK-KNACKS," by F. E. Battershell, D. D. S., N. Philadelphia, O., read at Tuscarawas Valley Dental Society, January, 1896. *To replace a block of teeth where the pins are broken or have pulled out.*—Take a piece of 22k. gold wire, twelve to fifteen gauge, cut two bits of sufficient length to reach across the thickness of the approximal surfaces of the block and project into the rubber. Rivet-head both ends. With fine wheel cut circular notches on either side of the block large enough to allow the pin to pass through between it and adjoining block into space for rubber. Cut these notches near or into border of tooth; and when

the work is completed, and the clinching rivet-head finished it will resemble a neat filling of gold. Also the block will be more secure than with the original pins. Sample pinless blocks may be thus used.

Electricity for tooth-ache.—Whether from inflammation of the pulps or of the peridental membrane, tooth-ache may be arrested at any period before transudation of the leucocytes has reached the point of abscess, by the application of a mild electric current for from ten to twenty minutes. For this purpose the positive current should be divided, one wire fastened to the forceps and the other, with the negative put into the hands of the patient. Now begin with the mildest current and increase until the sensation begins to be unpleasant, then diminish a little, and apply forceps to the tooth. Protect lips by slipping a rubber nipple over beak of forceps. Increase current again as much as can be comfortably tolerated, and hold until pain altogether subsides, which is about ten minutes. Remove for a brief space, and apply a second time for five minutes; this to counteract the reflux in the capillaries. Watched and waited minutes are long, but on this account do not narrow the prescribed time. After placing forceps with right hand, change to left, and resting forearm on arm rest, stand at rear of patient, otherwise the operator may experience some inconvenience. These directions carefully followed will quiet tooth-ache and complaint.

Excavators vs. burs.—The present tendency seems to incline towards the disuse of excavators and more and more in favor of burs. Some operators going so far as to depend altogether upon the engine in the preparation of cavities for filling. This new habit we think is reprehensible, for several reasons: first, excavators remove carious material more rapidly and thoroughly. After burring out a cavity as carefully as can be done, one does not *know* the precise condition without having examined the walls with an excavator. Such search often reveals a branching cavity sometimes as large or even larger than the first; and always discovers carious material beyond the range of engine drills. The rotating process of drilling is so unlike the sweeping effect of cutting with the excavator, that what is run over with the engine drill, is easily turned out and swept away by the excavator. Another valuable point of difference is, that the excavator can al-

ways be sharpened and kept sharp, while the bur is becoming progressively duller; consequently when much used, instead of cutting it only rubs. To the many well-known forms, the office forge has supplied an additional one for our use, which others may find serviceable. This form reaches those indentations under the grinding surface of molars and bicuspid, so difficult of access. It is shaped like the letter U; one stem of which, slightly curved and continued, represents the handle. Three or four sizes of this instrument, in spoon shape and hoe shape, will enable the operator to do easily what would be very difficult, and oftentimes undone, with ordinary forms. Again, the engine hand-piece, encumbered by the heavy coil, is clumsy beside the free and slender excavator. Therefore the touch of the excavator is much more sensitive, which is a very significant quality when approaching the nerve, or when working frail walls. The excavator ought not to be discarded. It once was young, but is now old; yet it has never fussed, or grumbled, or wobbled, or refused to work when treated respectfully.

"TREATMENT OF PULPLESS TEETH," by Dr. J. J. Grout, Rock Rapids, Iowa, read before Northern Iowa Dental Society, September, 1895. When I have a pulp to destroy, I use a paste of arsenic and creosote, applying from 1-60 to 1-120th of a grain, according to the size of the pulp and the ability of the patient to present himself for treatment. Where practicable and possible I apply tannin and glycerin after the pulp is devitalized and leave it from six to eight days, when I extract the pulp entire with a broach, cleanse the root with pyrozone and campho-phenique, thoroughly dry, moisten the canals slightly with eucalyptus oil, pump chloro-percha to the ends of the roots and follow with gutta-percha points. Where the pulp is putrescent, I follow a little different course of treatment. After removing all septic matter possible with pyrozone, and drying, I introduce on a shred of cotton carbolic acid 1 part, oil cloves 2 parts, oil cassia 3 parts; seal this in with Gilbert's stopping, leaving it from two to ten days as indicated, then fill as above described.

Judgment should be used in all cases, as to amount of paste necessary, length of time it should be left in the tooth, what medicament should be used later, general conditions of the tooth.

and the patient's ability to present himself when needed, etc. But in each and every step be conscientious and thorough. I always use the dam when possible. I also use root drills, burs and sulfuric acid to open up the root canals, when in my judgment they are indicated. No arbitrary set of rules can be laid down for the treatment of all cases. My advice is: Use as little medicine and as few treatments as are consistent with good and thorough work.

"ABSCESS OF THE ANTRUM," by E. D. Brower, D. D. S., Lemars, Iowa, read before same society. *Causes.*—We find a number of authors who claim that the majority of inflammatory diseases of the lining of the maxillary sinus are a continuation of the inflammation of the nasal mucous membrane. This view is not coincided with by others. Dr. Wm. Carr, of New York, in a paper read before the American Medical Association in 1889, stated that of the cases that have been under his immediate observation, fully eighty per cent. were caused either directly or indirectly by diseased teeth.

When we consider the anatomical relation of the teeth to the antrum, that they are separated only by a thin layer of bone, and frequently a root protrudes into the antrum, covered only by the membrane; when we consider the vascularity of the alveolar process, and the frequent pathological changes of the teeth and their alveoli, these changes being pericementitis, alveolar abscess and necrosis, we can easily comprehend why diseased teeth cause such a large percentage of antral diseases.

In my own experience, in every case of antral inflammation or abscess I have found an opening from some tooth into the antrum, and I am satisfied in my own mind that all the cases that I have had under my care have been caused by diseased teeth.

Symptoms.—There is a dull aching pain in the cheek, with heat, redness, and fullness of the soft parts externally. There may at once be purulent discharge from the nose, but the swelling of the mucous membrane soon closes the sinus. There is now throbbing pain, rigors, fever, expansion of the jaw, elevation of the malar bone, projection of the molar teeth, depression of the arch of the palate bone; and the finger seldom fails to detect the fluctuation.

Treatment.—Here again we have a variety of opinions and some very elaborate descriptions of methods of opening into the antrum.

In all the cases that I have had there has been a sore tooth to extract. In looking over my record of cases I find I have had openings from the first bicuspid to the third molar. If there is no diseased tooth, extract the first molar. Make an opening into the antrum large enough to use a syringe freely. Syringe first with warm water.

I find in my first cases I used a solution of carbolic acid after the first cleansing with warm water, later I used listerine instead of carbolic acid. Again, the past few years I have used peroxid of hydrogen in various degrees of strength, followed by diluted listerine. I have found some cases of recent origin where the extraction of a tooth, with one or more thorough washings, was sufficient.

In reviewing my record of cases since peroxid of hydrogen has come into general use, I find that I have used it in almost every case after syringing with warm water. There is one thing that must be observed. A free opening must always be had before using peroxid of hydrogen. If the case at hand has a copious discharge of pus the antrum should be syringed daily; but if not, I would at first see the patient twice a week, then once a week until complete recovery. In quite a number of cases that I have had the patient lived some distance in the country; I provided the patient with a syringe and a solution with instructions how to use.

Pacific Stomatological Gazette for April, 1896.

"EXTRACTION AS RELATED TO ORTHODONTIA," by C. L. Goddard, A. M., D. D. S., San Francisco, read before So. Cal. Odontological Society, Oct. 1, 1895. As the assertion is sometimes made that it is never necessary to extract a tooth in order to correct an irregularity, it will be well for us to inquire for a few minutes into the causes of certain irregularities.

I will direct your attention to two classes only: first, superior protrusion, sometimes accompanied by a V-shaped or pointed arch; and, second, prominent cuspids with depressed laterals.

The origin of both of these irregularities may be the same—

that is, a small jaw inherited from one parent, or other ancestor, and large teeth from the other. In this case, starting from the first permanent molars as fixed abutments of the arch, if the teeth anterior to these arrange themselves in a normal line as regards each other, they will form an arch larger than that section of the jaw which supports them, and the alveolar process growing around them will conform to their position, forming thus a case of superior protrusion. If the teeth anterior to the first permanent molars do not arrange themselves in a normal line as regards each other, the incisors may erupt in normal positions, as also the bicuspid, thus taking up all or nearly all the room, so that the cuspid erupt outside of the arch, and in doing so depress the laterals.

Another cause may produce the same result, even when the teeth are of the normal size for the jaw, namely, premature extraction of the second deciduous molars. When this occurs the first permanent molars crowd forward. We may remark, in passing, that for some unexplained cause the posterior teeth tend to move forward when there is room for them to do so. I have seen two cases where the first permanent molar was in contact with the cuspid.

If, then, the second deciduous molars have been extracted prematurely, and the first permanent molars have moved forward so as to occupy part of the space belonging to the second bicuspid, not enough space will be left in the arch forward of that point for the teeth which are to occupy it, and the result will be too small an arch for normal teeth. While in the first case mentioned the teeth were too large for the jaw, the effect will be the same. The first permanent molars standing as firm abutments, often reinforced by this time by the second permanent molars, the teeth anterior to them must erupt so as to form too large an arch, producing either superior protrusion or V-shaped arch, or must crowd the cuspids out of line.

Superior protrusion, V-shaped arch and "prominent cuspids with depressed laterals" may also be due to other causes, such as thumb-sucking, lack of development of the intermaxillary bone, etc.; but we will consider now only the two causes mentioned.

In the case of superior protrusion the anterior teeth must be moved back, and in the other case the cuspids must be moved

backward and the laterals forward. In either case, owing to the causes mentioned, it is necessary to make room; and, in my opinion, the only way to make room is by extraction of one of the bicuspid or of a first permanent molar on each side, preferably the first bicuspid, unless one of the other teeth is very defective from caries. If all the room thus gained is needed, an appliance may be used which will move back the anterior teeth in the first case (or the cuspids only in the second case) without disturbing the teeth posterior to the space.

In case only part of the space is needed, an appliance may be used which will move the back teeth forward, while it also moves the front teeth backward, and thus fill up all the space.

As the second class of cases, "prominent cuspids and depressed laterals," and, also, the pointed or V-shaped arch, may be also due to other causes, let us consider the subject further. *Etiology.*—This common (form of) irregularity may be (*a*) constitutional, due to lack of development of the intermaxillary bone; (*b*) inherited, large teeth and small jaws; (*c*) acquired, from premature extraction of the deciduous cuspids; (*d*) from premature extraction of second deciduous molar and crowding forward of first permanent molar, leaving less than the normal room for bicuspid and cuspids.

Treatment.—To make room for proper arrangement of the teeth in this class, it is generally necessary to expand the arch or extract one or more teeth.

Unless the arch will admit of expansion to advantage, extraction is better.

If expansion should make the arch too large, or the anterior teeth too prominent, extract. If the superior maxilla itself is so narrow that expansion would make the bicuspid and molars slant outwards too much, extract. If caries are prevalent, extract.

In favor of expansion: The full number of teeth are retained, the pain of extraction is obviated, and a narrow arch is widened and made to correspond with the other features.

In favor of extraction: Room is gained more easily; the treatment is simplified, as there are fewer teeth to be moved; the teeth are retained in their new position more easily, because, if no teeth are extracted, the same cause that produced the irregularity tends to reproduce it, while if room is made by extraction the action

of the lips and tongue tend to move the teeth into the normal arch.

With expansion nature works against us. After extraction nature works with us. In many cases no other treatment than extraction is necessary.

Having decided upon extraction in any case under consideration, the choice lies between a lateral incisor and some tooth posterior to the cuspid. *The cuspid should never be extracted*, as, on account of its long root and prominent position, its loss causes a depression of the corners of the lip and wing of the nose that can never be remedied.

The choice between a lateral incisor and some tooth posterior to the cuspid depends on the position of the apex of the root of the cuspid, and also of the lateral.

If the apex of the root of the cuspid is so situated that the crown slants away from the median line, or will do so after being moved into its normal position, the extraction of one or both laterals is admissible.

If a lateral is unusually far back of the normal line and the apex of the root also, when the tooth is moved forward till the cutting edge is in line with the centrals, the neck of the tooth will be back of its proper position—that is, the tooth will have an unnatural slant forward. This is not of as much importance as the apices of the roots of the cuspids, for the roots may be moved forward by Case's method, but should be taken into consideration in connection with the other.

In very rare cases a central incisor may be extracted to gain room—that is, if very badly decayed; if an incurable abscess exists, or if the root only remains and cannot be crowned to advantage.

In the lower arch an incisor may be extracted to advantage in many cases, as the four are so nearly alike in appearance that the absence of one is not noticed.

If, in a given case, it seems best to extract some tooth posterior to the cuspid, the choice will lie between a bicuspid and the first molar.

If the bicuspids and first molar are equally sound, extract the first bicuspid. This will leave two teeth for anchorage in retracting a cuspid; or, if the second molar is erupted far enough,

three teeth may be utilized: Very secure anchorage is necessary, for the cuspid is the most difficult tooth to move, and oftentimes the two anchor teeth will move faster than the cuspid.

In some cases the cuspid needs to be moved back but little, then the second bicuspid only need be used for anchorage and the two teeth moved toward each other to fill up the space. The molar will follow, owing to the tendency of the posterior teeth to move forward.

If, however, the second bicuspid or first molar is so defective as not to be easily preserved by filling, the defective tooth should be extracted. This, however, will complicate the case, as more teeth are left to be moved, and fewer for anchorage.

Fig. 7 shows the writer's modification of Prof. Guilford's appliance for retracting the cuspids. On each cuspid is cemented a band with a hook on each side. On each second bicuspid or first molar is cemented a band with a tube on each side. The posterior end of the tube is filed so as to serve as a hook.

If the bands are fitted to both bicuspid and molar, and soldered together, the anchorage is increased and the tendency of the teeth to tip forward is lessened.

A rubber band stretched from one hook to the other on both buccal and lingual surfaces gives the power, and the cuspid moves back. After the cuspid is moved in position it can be retained by substituting fine platinum or silver suture wire for the rubber bands. The buccal tubes may be utilized for inserting the ends of a wire bow which passes in front of the incisors. Rubber bands from this bow will draw the lateral incisors forward. An inner bow can be placed in the lingual tubes and utilized for drawing central incisors backward, or rotating them, as is often necessary in such cases.

If either cuspid needs rotating, a rubber band will be needed on one side of the tooth only, and the hook may be so placed on the band that the tooth will be rotated as it is drawn back.

Prof. Angle advises the use of the drag-screw for retracting cuspids. By soldering a long tube to two bands which are cemented to two teeth, and extending the drag-screw through this tube, he reduces to a minimum the possibility of the teeth tilting. This appliance is very effective. The position in which the hook is attached to the cuspid band will depend on whether it should be rotated or not in retraction.

After the cuspids are moved to their new position the same appliance may remain as a retainer. It will be found that a cuspid moved into its proper place, when room has been made by extraction, will need less retention than any other tooth.

Greater anchorage can be obtained by a plate, for it impinges upon the anterior alveolar ridge and incisor teeth as well as upon the posterior teeth. Its use is especially advantageous when a second bicuspid or first molar has been extracted, for then one or two teeth must be moved before the cuspid. A wire or clasp should encircle the posterior tooth for greater anchorage.

When room has been gained by extraction, as indicated in these cases, it is not necessary to wear a retaining appliance for as long a time as when room has been gained otherwise.

Retaining appliances should be of such construction that they may be cemented to the teeth, and connecting parts should be of such slender construction that the teeth can easily be kept clean. In many cases the same appliance that was used for regulating may be used for retention. If a screw has been used, the nut may be cemented in a fixed position. If piano wire has been used, non-elastic wire may be substituted. If ligatures or rubber bands have been used, they may in many cases be replaced by suture wire of silver, platinum or gold.

As was hinted in one part of this paper, expansion of the arch may be best in some cases of V-shaped arch, and also in some cases of prominent cuspids and depressed laterals, but a study of such cases would prolong this paper beyond endurance.

Zahnaerztliches Wochenblatt for Feb. 29, 1896.

"THE APPLICATION OF SULPHURIC ACID TO DEVITALIZED PULPS," by Dr. Albert H. Mebes, of Berlin, translated by Dr. B. J. Cigrand. It is an undisputed fact that yearly thousands of teeth are allowed to waste away which certainly could have been preserved, had their roots been sufficiently sterilized. That there are in America and also in Europe practitioners who assert that they are able to thoroughly fill all root-canals is well known, but the fact remains that the test root-canal fillings of these gentlemen show great deficiency and defectiveness.

Concerning the treatment of the six anterior teeth the matter is very simple, quite different in bicuspids presenting two roots;

and how frequently it occurs in tri-rooted molars—both superior and inferior—that, notwithstanding all possible effort and caution, the entrance to the anterior buccal canals is sought in vain, and consequently they are not sterilized or filled. If no failure results it is most fortunate and the operator is particularly lucky, but in most cases trouble immediately sets in and a short time after the tooth is subjected to the forceps.

Among the remedies which are indicated and which give favorable results in difficult cases I mention the employment of sulphuric acid. To use a 50 per cent. solution of sulphuric acid on tooth substance appears at first thought most dangerous, nevertheless such is not the case, as I will briefly show.

Dr. Callahan, of Cincinnati (U. S. A.), was the first to suggest the employment of sulphuric acid (50 per cent. sol.) in the treatment of root-canals, and subsequent to his experiments many other dentists in America and Europe followed the treatment with good results. I have also conducted tests along this line and feel it my duty to further increase the cycle of the Callahan method.

Taking for example an inferior molar whose pulp has become devitalized, either through medication or natural causes, the following would be the method of procedure, if employing sulphuric acid:—Subsequent to placing the rubber-dam the root-canals are thoroughly opened; then twist a small amount of cotton about a pliable nerve-canal broach, dip the latter in a 40 or 50 per cent. solution of sulphuric acid and apply it directly over the opening of the devitalized pulp. As a result of the evaporation of the water the dead pulp becomes ridged and shrunken, in consequence of which its extraction from the canal becomes a comparatively easy task. Now drop on the opening of each canal a drop of the acid solution, and in order that the acid reach the desired points, it is advisable to counter-sink the openings by means of a rose bur. With a Donaldson nerve broach, properly bent, slowly and cautiously inserted, giving a pumping movement to it, the canal is readily opened. The acid by this process is either driven before the broach or with it, and in either case destroys all septic matter extant. Keep up the pumping movement, gradually sinking the broach deeper into the canal, until the patient experiences slight pain. This method can be employed to open and cleanse all canals which are difficult of access.

Generally the solution while in the canal becomes permeated with the debris of the canal, often closing the opening of the latter. It is then recommended that a weak solution of carbolic acid be injected, and the acids thus coming in contact with each other cause a decided effervescence, dispersing upon the rubber-dam the contents of the canals; while the walls of the canals are covered with a deposit of Natrium bicarbonicum, which is readily removed by spurting distilled water or alcohol into the canal, thus leaving perfectly cleansed root-canals.

Ash & Sons' Quarterly Circular for March, 1896.

"NOTE ON TWO CASES OF LATE ERUPTION," by Dr. Maurice Roy, translated from *L'Odontologie*. The first case relates to a man 40 years of age, who possessed excellent and well-placed teeth up to the age of 38; his left upper temporary canine, however, maintaining its place, the permanent one did not come through. Two years ago this temporary canine became loose and was lost, and the permanent canine made its appearance; but it made its way inside the arch in such a manner that the lateral incisor was pushed forward and caused great annoyance to the patient. In the occlusion of the mouth the free edge of this tooth rested lightly upon the lower lip. He decided to have the tooth removed in order that this deformity might not become acute. He applied to one of our colleagues, who, after many efforts, was unable to extract the tooth. Some time after he came to me, and I succeeded in removing it; but only after many attempts and by employing considerable force was I able to complete the operation. The root of this tooth was enormous; it presented considerable exostosis; this, added to the situation of the tooth against the palatine face of the lateral incisor, explained the difficulty of the extraction.

The second case concerns a lady of 56, in whose mouth the right upper temporary canine had remained for a long time, and the permanent one had not been erupted. About seventeen years ago this lady lost her temporary tooth at the same time that she lost some others, and she had an artificial denture made. In 1889 I extracted some teeth and roots for her, and made her a new piece; she had then only the two last molars remaining, and there was nothing abnormal about her mouth. A few months back

this lady called to consult me respecting something she had noticed in her palatine vault. At the interior part there could be seen a little hard white mass, which pierced the gum; it was not mobile, and at the first moment I was inclined to think that it was a sequestrum, without, however, being able to explain the cause to myself. As there was nothing of an urgent nature about it, I requested the patient to visit me later on in order that I might follow the progress of this strange thing. She came again two months afterwards; the hard white mass which I had observed was a little more visible, and on exploring carefully under the mucous membrane, I was able to recognize a tooth. After anæsthetising with cocaine, I was enabled to remove it; but, on account of its placement, not without difficulty. It lay transversely, the point of the crown near the median line of the palate, the point of the root outwards and rather upwards.

I did not take an impression of the first case, and I have not kept the tooth; but I am able to show you the impression of the mouth and the tooth of the second case; this tooth exhibits slight erosion, and the root is somewhat exostosed upon its anterior surface.

Beyond this, I deem it my duty to call attention to the frequency of exostosis in cases of vicious eruption; this is a little point in pathology which, I believe, has not yet been noted. This exostosis, the pathogeny of which is easily explained by the prolonged irritation of the periosteum, presents itself in these cases in nearly an invariable manner, and it is very frequently observed upon the wisdom teeth, the eruption of which is so difficult. One is able even to see this exostosis upon the neighboring teeth; I was thus able in the case of a patient for whom I had to remove the second molar and the wisdom tooth, both healthy, to remedy some grave accidents due to the eruption of the latter tooth. I found the roots of the wisdom tooth cemented together and with considerable exostosis, and the roots of the second molar equally exostosed, but with this peculiarity: the posterior root immediately in contact with the wisdom tooth presented a cemental hypertrophy which was very marked, while the anterior root, on the contrary, was only to a slight degree affected with it; this then was an evident proof, if it had been needed, of the cause of this hyperplasia.

"THE ROENTGEN X RAYS." At the monthly meeting of the Odontological Society of Great Britain, held on Monday evening, April 13th, Mr. Chas. A. Clark, of Forest Hill, London, exhibited a photograph of a second lower molar in the mouth, taken by the Roentgen X Rays, which clearly shows (1) the crown and roots, (2) the enamel and its junction with the dentine, (3) the pulp. We think Mr. Clark is to be congratulated upon his success in this matter, for his experiment proves beyond a doubt that the Roentgen X Rays are likely to be as useful in Dental Surgery as they promise to be in General Surgery.

"ON THE USE OF ANTISEPTICS IN DENTAL WORK," by C. Edward Wallis, M. R. C. S., L. R. C. P. In writing on this subject one is at the outset confronted with the difficulty of deciding how much should be said and how much left unsaid, and in this article it is my desire to give what I conceive to be the chief indications as required by the ordinary practitioner, to prevent the conveyance of disease from one patient to another, by the imperfect cleansing and sterilizing of instruments and other dental appliances.

Of the importance of the matter I imagine no one brought up in the modern methods of surgery can have any doubt, and especially indeed when one calls to mind the fact that in the mouths of even healthy people the organisms of tuberculosis, diphtheria, suppuration, and many other diseases are found, which, if introduced into the mouths of others whose phagocytic power is deficient, will, in the presence of any wounds or abrasions, be extremely likely to inoculate the recipient with the disease of which they are the respective cause.

We have all of us seen syphilitic lesions in various parts of the lips and oral cavity in the form of chancres, mucous patches, ulcers, gummata, and so on, the discharges from which have been shown to be contagious in the highest degree, and yet possibly there are many who, not recognizing either the lesions themselves or their extremely contagious character, would regard it as sufficient simply to wash their instruments in cold water, while others, a little more careful, would regard their momentary immersion in boiling water as being a sufficient safeguard. This latter proceeding has been shown to be well-nigh useless, owing to the fact

that many of the most prevalent micro-organisms are only destroyed after protracted boiling in water, an example of this great power of resistance being furnished by the bacilli of tuberculosis, which are not destroyed till they have been submitted to the action of boiling water for a prolonged period.

In the face, therefore, of the above facts, it behooves everyone to take the utmost care in the matter of cleansing and sterilizing, and to pay special attention to those instruments which are most likely to harbor septic material in their interstices, such as lancets, forceps, rubber-dam appliances, mouth props, the mouth tubes of saliva ejectors, while above all not forgetting the mouth mirror.

The next point to decide on is an antiseptic solution which must be absolutely reliable, readily made and inexpensive; and in the selection of this we cannot do better than follow the teaching of Sir Joseph Lister, who, after many years of research, decided that in a solution of carbolic acid in water, in the proportion of one in twenty, we could place the utmost reliance, since the investigations of Crookshank have shown that all the organisms of which we need have any fear are destroyed after a few minutes' immersion in a solution of this strength, and that after its careful use we run no risk of disseminating such terrible scourges as tuberculosis and syphilis.

Dental Practitioner and Advertiser for April, 1896.

"ARTIFICIAL DENTURES," editorial. Clearness of enunciation in speech is very largely dependent upon the development of the alveolus, and this in turn depends upon the development of the teeth. No one with a narrow contracted arch, or with an undeveloped or over-developed alveolus, will have clear speech. When the teeth are lost, and the alveolus has been absorbed because it no longer has any function to subserve, all distinctness of articulation is lost. It then becomes the duty of the dentist to attempt the restoration, not only of the teeth, but of the alveolus also. And yet how many take this latter supplemental action into account? They use great care and exercise artistic skill in getting the artificial teeth into proper position, and perhaps carefully restore the contour of the facial muscles, but give scarce a thought to the lost lingual portions of the alveolus, upon which distinct speech depends.

The enunciation of most of the sounds of articulate speech must rely upon the ability to properly control the emission of air in the incisor region. This is accomplished by allowing the tip of the tongue just to make contact with the palatal arch immediately behind the incisor teeth. The delicacy of the adjustment of the tongue to this space makes the difference between clear and clumsy speech. If the teeth shall have been lost and the alveolus absorbed, in most cases the tongue will fall short of contact, and inability to pronounce certain sounds will be the result. If an artificial plate is now adjusted which shall exactly restore the alveolus that was lost, and the teeth be in their proper position, perfect speech is restored. If the plate immediately back of the incisors, just where the tongue comes in contact with the arch, be too thick, the speech will be the same. If not thick enough—the most common fault—there will be a constant hissing and sibilation in articulation. The tongue does not properly close the aperture. The clearness of enunciation where an artificial denture is worn depends, very largely at least, upon the adjustment of material just where the lingual alveolar ridge existed, immediately at the base of the upper incisor teeth.

The Dental Review for April, 1896.

"A FEW THOUGHTS ON THE ESSENTIALS OF SOLDERING," by H. J. Goslee, D. D. S., Chicago, read before the same society. To begin with, the essential elements of soldering are: The thorough removal of all oxidation from the surfaces to be united; contact or apposition of the parts; the use of a *flux* upon the surfaces of both metal and solder, which permits the latter to flow readily, and of union between them, by preventing oxidation; and the heating up of the object to be soldered—whether it be in an investment or not—to or near the degree of heat required to fuse the solder, before any attempt is made to do so.

Now the definition of solder, as we understand it, is a combination of metals which fuse lower than the highest fusing component part; zinc being mostly used in the ordinary gold solders as the baser incorporate, by which the fusing point of the mass is reduced and regulated, imparting also increased properties of flowing. Consequently, a twenty carat solder, for instance, will fuse lower than plate of the same carat, otherwise it would not be

a solder; and yet there are some, I dare say, who would not think of using a twenty-two carat solder to unite plate of the same carat, while it may, of course, be done with perfect ease, and in cases which require two or three solderings to good advantage, as such would in that case facilitate matters by lessening the possibility of unsoldering parts already attached, during the subjection of same to subsequent soldering, enabling you, at the same time, to accomplish a desired result by using as high a carat as possible in finishing.

Perhaps paramount among the difficulties encountered in or connected with the soldering of plate or crown and bridge work is the apparent unavoidable fracturing of porcelain facings, and while it now seems probable that the coming work of this kind may, perhaps, be done without subjecting the porcelain to the heat of soldering, "but by the method already in vogue, apparently to some considerable extent, of simply soldering the backings which have previously been perfectly fitted and adapted, in their respective or relative positions, and subsequently retaining the facings by means of cementing and riveting;" it is, at the same time, perhaps just as well to consider for a moment the *cause* of the frequent checking of facings, for, in my present opinion, which is based upon my own observation and experience only, there seems to me to be no imperative reason why it cannot be avoided in no limited percentage of cases; though we are aware at the same time that some of our best men in this line do not hesitate to make the broad assertion, "that few facings are ever entirely devoid of checks after soldering," and contend that if the same at the time are not noticeable to the eye, they are conspicuously so when the facing is subjected to the *lens*, or that they materialize and appear in time.

It must be remembered that a porcelain facing in itself presents two substances, the porcelain feldspar, and the platinum pins, each of which is affected very differently by the great amount of heat necessary to solder; the former absorbing and retaining the heat for a considerable length of time, and the latter, while absorbing it readily, gives it off or cools with equal rapidity; consequently, when a tooth, properly backed, is to be soldered, too much care cannot be exercised in cautiously and evenly distributing the heat from the beginning of its application, so that

the porcelain which is usually farthest away and covered or protected by an investment material, receives it in equal proportion simultaneously with the metal; otherwise the metal receiving the bulk of the heat first rapidly through the medium of the platinum pins conducts it to the porcelain before the latter is correspondingly and sufficiently heated to avoid *uneven expansion*, and, as a result, the characteristics of the substances considered, what would be more natural than the occurrence of a fracture in the more brittle and friable material, usually across the center of the facing, on a line with the pins?

Acknowledging this then to be one and perhaps the main cause, it is evident and conclusive that it can be avoided by so regulating the application of the heat that the investment, which is usually a poor conductor, receives the most of it, or entirely so, until the whole shall have reached a high degree, which having come from the outside, as it were, must have been equally and evenly distributed; and furthermore, as a precautionary means, the platinum pins should always be cut off as close as possible to the backing, leaving only enough remaining to retain same in its proper relation to the facing by splitting or riveting them; for if left standing out straight or bent over upon the backing, they must necessarily by virtue of their prominence receive the bulk of the heat from the blowpipe as soon as the flame is directed upon the backing.

Great care is also necessary in the preparation of a facing to receive its backing, and in the perfect adaption of the backing to the same, that no overhanging edges of the metal be left upon the porcelain, as this will invariably result in a fracture or numerous small checks occurring along the edges of the facing so neglected and due to the impingement upon the porcelain, occasioned by the contraction of the solder upon the backing in cooling; and in this respect, and of equal importance of course, is the arrangement of the teeth in alignment, that sufficient space be left between them to allow for the taking place of this same physical change in the metal upon cooling; and it may also be well to add that after the soldering is completed the utmost care should be exercised in excluding any draught of air which may have a tendency to prevent the contraction of porcelain and metal taking place gradually and at the same time, and no attempt should of

course be made to remove the case from the investment until this may have taken place and both are cool.

The extravagant and injudicious use of *borax* is another cause of numerous cracked facings, as it fuses lower than solder, and owing to the expansion of the average investment material it is thereby permitted to run out over the edges of the backing upon the surfaces of the porcelain and usually or invariably results in fracturing the latter by giving off its heat and contracting much sooner.

The use of perhaps the most commonly used investment material, consisting of pumice stone in conjunction with plaster of Paris, presents, I believe, very objectionable features and of sufficient detriment, especially regarding its use in connection with porcelain facings, as to cause it to be avoided; for, to begin with, it is a poor conductor of heat, expands very readily and unless protected by a ferrule of metal, or by wiring tightly together, or by being much larger in bulk than either desirable or necessary, it invariably cracks open or falls apart, rendering liable the exposure of the heated facing to the air, which of course results in fracturing same; and again the pumice stone, like borax, fuses lower than the ordinary solders, and if in contact with adheres to the surface of the teeth, and in cooling and contracting much sooner renders liable the presentation of the same undesired result.

Believing then, after careful consideration and numerous experiments, that in these we can safely concede the maximum number of probable *causes* of this particular *bugbear*, I experience no hesitancy in maintaining that if the proper care, skill and judgment be exercised there is no necessity, and indeed very little excuse, for the fracturing of porcelain facings during the process of soldering, and consequently can see but little advantage or merit in the method hereinbefore referred to, "of simply soldering the backings and subsequently retaining the facings by means of cementing and riveting," and likewise feel no hesitancy in proclaiming it to be more of a *fad* than anything else, and certainly possessing more disadvantages than advantages; however, confining myself to the—let me say—conscientious expressions regarding the unnecessary cracking of facings in soldering; we can in this respect refer to the similar assertions of no less an

authority than Dr. E. T. Starr, of Philadelphia, a gentleman who has devoted almost a lifetime to the study of the characteristics of the materials used, and to the manufacture of porcelain teeth; and moreover to corroborate these assertions, let us think why it is that so few facings are cracked in the construction of *porcelain work* where they are subjected to the heat of both the high and low fusing bodies. True, they are occasionally fractured even then, but very seldom and the ratio is certainly much less as compared with metal work.

Is it not because the porcelain and metal being inclosed in the muffle receive the heat at the same time, expand and contract under its influence together, that there are no overhanging edges of metal backings to impinge, and that there is no borax or low fusing investment materials to interfere?

And now a few words regarding the appearance of these cracks or fractures occurring or presenting themselves at some later period, as previously referred to, and contended by some. It seems very evident to me that when they do occur, and I regret to say that it is only too often, that it is due, *not* to the fracture having been there since the tooth was subjected to the soldering, but more likely to negligent or poor adaptation of its backing, rendering in itself no protection whatever to the facing from the continued strain brought to bear upon it in the force of mastication, and I think it is safe to say that there are not one-fourth of the facings used, whether they be on plates or crowns or bridges, that are properly protected to withstand the ravages of this powerful force.

To see a facing badly checked or entirely broken off of a crown or bridge after same has been worn for some little time is by no means an uncommon occurrence with most of us, but to attribute this to the belief that it was due to the soldering, and has been present though perhaps not visible since that time, seems hardly consistent, when, as a usual thing, all we have to do is to examine the broken facing and we will almost invariably see that that facing has had little or no protection along the cutting edge, and it is perhaps reasonable to infer that it lasted quite as long as could well be expected under the circumstances; for when we stop to consider the amount of force to which a facing is and must be subjected in masticating, and remember that it is

retained by means of its attachment in a position both rigid and unyielding to the slightest extent, how can we overlook so important an essential as providing for the proper protection of them against any possible unnecessary strain, when the same can be accomplished with very little more work, and much more gratifying results.

I am of the opinion that crown and bridge work would in the long run prove less laborious, and infinitely more successful and satisfactory to both dentist and patient, if all were inclined to make an endeavor to remedy this evil, and regard this part of the operation as almost next in importance to the fit and adaptation of a crown to the root.

To accomplish this the facing should first be ground to assume its proper position and fit accurately, after which the lingual portion of the cutting edge should be ground so as to produce a sharp but smooth angle along the edge, the bevel extending to about one-half the distance to the pins; then the lateral sides should be slightly ground to give a smooth marginal edge to which the backing may be finished nicely and without danger of overhanging edges. Preferably use pure gold from twenty-nine to thirty gauge, and after burnishing to fit nicely and leaving a small margin of surplus around the edges, it then should be removed and reenforced with plate or high carat solder to desired thickness. After it is sufficiently reenforced to insure strength, replaced upon tooth and riveted, the smooth marginal edges will enable it to be finished down to a fine line, leaving a joint when finished so close as to render it practically impervious, but in dressing it down along the cutting edge the file should be passed on a line parallel with the face of the tooth, which, as can readily be seen, will leave the thickness of the metal covering and protecting this edge, and which can be left of a uniform and desired thickness to receive the force of mastication and relieve the porcelain of all strain.

Another great annoyance along the line of soldering, and of not uncommon occurrence, is the tendency of solder to *ball up*—and which is invariably due to the endeavor to cause it to flow before the parts to be united are sufficiently heated, for as the affinity one metal for another is increased by heat, it is imperative to first gradually raise the heat of the higher fusing metal to or

near the degree at which the solder will fuse, and after accomplishing this, by applying the solder and then directing the flame upon both the surfaces of the parts and of the solder having previously been fluxed with a thin paste of borax, no difficulty will be experienced in causing the solder to flow nicely with but a small pointed flame from the ordinary blowpipe and without any exertion whatever. But if on the the contrary the flame be directed upon the solder before the parts to be united are sufficiently heated, it will fuse within itself and ball up, and if much time be then consumed the baser alloy or zinc will be burned out, requiring in consequence a greater degree of heat to cause it to flow than otherwise, and as the depletion of the zinc will to some extent increase the fusing point and decrease its flowing properties, the liability of fusing or burning the object to be soldered is also increased.

The parts should be fluxed before heating up, and it is always necessary to flux well the surface of the solder before attempting to control it, as containing zinc renders it so easily oxidizable it will not flow or cannot be managed unless it is properly fluxed, and in this respect it may be well to emphasize the fact that the borax should be mixed into a thin paste and applied with a small camel's hair brush or similar means, as the quantity used can be governed better and its application be made only where it is needed, thus avoiding the common and by far too generous use of powdered borax, which as has been previously stated increases the danger of cracking the teeth, renders the solder more difficult to handle and oftentimes causes the surface of the work to be freely covered with small pits.

For *investing* there are perhaps several substances which, in conjunction with plaster, possess all the desired qualities and advantages; however, we are inclined to use and give preference to the use of a material composed of ordinary fine white lake sand one-third, and plaster two-thirds, believing it to meet the requirements as well as any and much better than some, for, being considerably coarser than many, it conducts the heat better, does not expand so readily, and the sand fusing so much higher than pumice stone, avoids the previously mentioned objectionable liability in connection with that substance.

The investment should be no larger in size or bulk than merely sufficient to cover and protect the teeth and retain the parts

in position, and should be protected from expansion as much as possible by a narrow rim or ferrule of metal, or by being poured on to finely interlaced wire netting.

In instances where the parts to be soldered are not in contact one with the other, as frequently occurs, the space or spaces between may be filled in with foil gold to good advantage and thus bridged across, rendering the work of uniting them very simple; or with the use of a pointed steel instrument the solder, when just beginning to fuse, can be pulled or coaxed over and across such spaces with ease.

In *coaxing* and in the controlling and management of solder, it is of much material assistance to see and note that *gravity* be favorable, for no matter how skillful one may become, it is of course somewhat difficult to cause a given mass to run up hill against its own weight, consequently, in uniting a piece of two or more teeth for instance, and especially if it be for the anterior part of the mouth where the curvature is greater, it is necessary to change the relative position as you progress, in order that the solder may run where it is required and remain when fused in the desired location.

Another not unusual occurrence of no little annoyance in the construction of a plate or crown, is the appearance of one or more small holes in the metal during the process of annealing and swaging and which is usually due to the presence of a baser metal upon the surface of the gold, usually tin or lead, which fusing so much lower than gold, becomes incorporated at its point of contact when same is being annealed, and results in the presence of a small hole. This baser metal is usually deposited upon the surface from contact with the dies during the progress of swaging, and the same with its aggravating results can of course be easily avoided by treating the metal to the acid bath after each swaging, being careful afterward, however, to thoroughly neutralize the acid by the free application of water before again attempting to heat or solder.

When the burning of such a hole does occur, or when one presents itself during the process of finishing, it can easily be obliterated with the use of a solder of same carat as gold by *sweating* over it a piece some little larger than the hole from the side not interfering with the fit or adaptation. In so doing it should not

be the attempt or desire to fuse the solder until it flows, but by first thoroughly cleaning and removing oxidation; investing if necessary to prevent unsoldering or for protection of porcelain; properly fluxing the surfaces of metal and solder; heating to a red heat, and then simply *wilting* or *sweating* the solder down to its place by the use of a small pointed intermittent flame from the blowpipe only until it becomes firmly attached without flowing perceptibly, then ceasing; the desired result is accomplished with comparative ease and very little danger.

If no investment be used or necessary, or even in cases where same is required, a precautionary means is frequently necessary to prevent the unsoldering of the parts; this can be very easily done by covering or coating such surfaces with either a solution of whiting or of plumbago, carbon or crocus (ferric hydrate), any of which will relieve all danger from that source.

I am of the impression that so far as soldering is concerned the use of the bellows is rarely if ever indicated, and should in fact be avoided, for the amount of heat necessary, which is usually very much overestimated by the way, cannot be so well regulated, and more harm than good is liable to result in consequence; and, furthermore, a greater amount of heat than the combination mouth-governed blowpipe will give, if properly applied, is very seldom required, but to blow a continuous flame is a very valuable accomplishment for the dentist doing gold work, and can be learned by most any one devoting to it a little perseverance and application.

HEREDITY IN HARE-LIP.—In an interesting paper read before the British Medical Association, Mr. William Sedgwick alludes to a communication by Dr. Allan Jamieson on "Cleft Palate and Incisor Teeth." In this it is stated that "among the children and grandchildren of four brothers cleft palate occurs in two, while others present peculiar anomalies in their permanent upper incisor teeth." In the son (K. M.) of the first brother there was harelip of the right side and fissure of the hard palate extending through the uvula and soft palate, and no trace of a right lateral incisor tooth. In the son (D. M.) of a second brother there was simply an oval aperture in the velum palati. In the son (C. M.) of a third, as well as the son (R. M.) of a fourth brother, the defect was limited to congenital absence of both lateral incisor teeth; and there was the same defect in a grandson (D. M.) of the last-mentioned brother. Mr. Sedgwick points out that, as not infrequently happens, there was in this, as in some other hereditary cases, a progressive diminution in the amount of congenital deformity.—*Brit. Jour. Dent. Sc.*

Letters.

A HINT FROM ST. LOUIS ON GUTTA-PERCHA POINTS.

ST. LOUIS, May 5, 1896.

Editor Dental Digest,

DEAR DOCTOR:—After lancing an abscess it is often desirable to leave a cone of medicated cotton in the opening. If we carry it in on a broach it will not always slip off. If we carry it in with pliers we distend the highly inflamed walls to the size of the cotton and pliers, plus the space we open the pliers to free the cotton, which is always withdrawn somewhat with them.

The above unnecessary pain and trouble can be avoided, and a cotton cone carried positively to the bottom of the opening, by dipping a gutta-percha point in chloro-percha and, while still sticky, wrapping it with cotton to make a cone. Then, when the cotton is on, dip the tip end in the solution, and it will go to the bottom every time, with the least amount of pain to the patient, as every motion counts.

Yours truly,

G. A. BRONSON.

NEW YORK LETTER.

NEW YORK, May 18, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—"Dr. Frederick W. Dolbeare, of No. 349 Tompkins Ave., Brooklyn, died in the Brooklyn Hospital yesterday after having undergone an operation. He was born in Montville, Conn., and had practised dentistry in Brooklyn for forty years. He was a permanent member of various dental associations. He leaves a widow and one son, Dr. Frederick L. Dolbeare, superintendent of the Brooklyn Inebriates' Home."

Good men do not necessarily die young, for our friend Dr. Dolbeare was a proof of it. We speak in this wise of the natural man, for there is a goodness of natural men. Dr. Dolbeare had these qualities and those of the supernatural also. He had a conscience "void of offense" and was a favorite among Brooklyn dentists. Not infrequently he figured as "our Poet," and there was a decided quaintness and point in his verse and it rarely

failed to hit the mark. He was extremely modest, and his skill was of the honest type, faithful in all he laid his hands to, always genial, and ever with a welcome grasp of the hand.

We recall our last visit to him very vividly. He brought out a surprise, a viol that he had built himself, and as we took it in our hands and looked it over we marvelled greatly. We said, "Of course you know how to make it talk?" and presently, laying it to his shoulder, his soul fairly spoke through the music. Many of us know of music that cannot be put into words, and his execution stamped that on our innermost being. Nothing human can ever be perfect, there must be a new condition, wherein no discords can ever jar the harmony of the immortal. The ideal may be in the natural, but nothing but the supernatural ever brings it out, and it will be our mistake if we do not seek it according to supernatural direction, which can be known only by the new birth—the natural man cannot discern supernatural things. This is the weakness of Ingersollism, which is leading so many bright men on to destruction. All this may seem a digression, but it has been so real to us of late that we cannot refrain from introducing these thoughts, running the risk of being refused a publication.

This recalls a recent editorial sermon by Dr. Geo. Hepworth, in the *Sunday Herald* of May 3rd. As we read it we thought, what a good article for a medical or dental society. While we do not endorse all of it, it certainly is very suggestive regarding the part that disease is playing against health in our bodies.

Dr. S. G. Perry will appreciate the allusion to the viol and the music of the inner being, for he is a connoisseur in violins.

Again, Dr. Dolbeare had great ambitions for his son, an only child. While he wished him to be a dentist, he thought he would be a better one if he could have a medical education. We somehow query why it is that a probably good candidate for a dentist is so often spoilt by a "medical education." We have had a bitter experience in this connection. The Doctor's son never filled the bill as a dentist. He did act on a board of examiners in the West, but it does not follow that a man is a dentist of superior ability because he gets on these boards—through a "political pull." Practical dentists are much needed on these boards.

That we may make ourselves clear, we think that the safer plan is to first educate in dentistry and then add the medical edu-

cation. Dr. Dolbeare, Jr., is now superintendent of the Brooklyn Inebriates' Home, and our son has been a medical missionary in New York for the last three years. Dr. Atkinson often asked, "Who maketh us to differ?" and it is not without an answer.

This is an off month with the First District Society, because of the State meeting occurring at the same time. The first of May formerly brought many changes among dentists, but this year seems an exception.

An item, it may be a novelty. We wished to weight a lower denture after we had it constructed, thinking it would be more easily kept in place. We burred a series of holes over the entire range of the inside ridge and filled them with amalgam. It was a success.

No meeting in May of the Odontological, all off till autumn, including a meet at Saratoga and adjournment to the Pacific Coast in 1897. So say enough of them for a tourists' excursion of the A. D. A.

Cordially,

NEW YORK.

DOG-WOOD.—For tenderness of a tooth after root-canal filling, Mr. Baldwin uses fluid extract of Jamaica dog-wood, asserting that it has a far better effect than tincture of aconite and iodine.—*Dent. Off. and Lab.*

A TOOTH IN THE NOSE.—At a meeting of the Medical Society of Christiania, Dr. Dave showed a tooth removed from the nose of a woman aged 53 years. The patient had complained of ear trouble, and during the ordinary examination the tooth was accidentally discovered. It was situated at the junction of the floor and external wall of the nasal cavity, and was easily removed from a small depression. It is said that the patient had all her teeth, although they were placed somewhat far apart, and therefore the abnormally placed tooth may be regarded as a supernumerary one. It resembled a milk canine, and the end of the imperfect root was covered with a fold of mucous membrane, with stratified epithelium. The speaker suggested that part of the mucous membrane of the mouth, with its tooth germ, had become impacted between the superior and premaxillary bones, and thus been cut off from the cavity of the mouth. Another speaker criticised this foetal dislocation, and believed it to be due to an inversion—a development in the wrong direction—by which the tooth had grown upwards into the nose. The same speaker also pointed out that the stratified epithelium of the mucous membrane did not prove a connection with the cavity of the mouth, as it is known that cylindrical epithelium cells after irritative processes are replaced by flat ones.—*Brit. Jour. of Dent. Sc.*

The Dental Digest.

PUBLISHED THE

TWENTIETH DAY OF EVERY MONTH.

Editorial.

THE MEETINGS AT SARATOGA.

These gatherings are the most important ones of the year. Their success, however, depends very largely upon the preparation beforehand. This is especially true of the meeting of the American Dental Association. Every section should be busy now, gathering the important work done on their particular subject in all the State and local societies throughout the country. A condensed report of all this work is what we should have each year, as it would be of great benefit from an educational point of view, and would have a tendency to more closely ally the various societies to this representative body. Much depends upon the chairmen of the different sections. We are perfecting the arrangements as fast as possible, and will give them as soon as completed. Let every society send a good representation to Saratoga and a complete report of the work done during the year.

ANOTHER STEP IN THE LITIGATION ON THE LOW BRIDGE PATENT.

We published in the last issue the decision in full of Judge Wheeler, reversing the decision given by Judges Wallace and Shipman several years ago in favor of the patent. This important decision was so great a surprise to the attorneys on the other side that they have not yet ceased to wonder at it. They immediately took action to get the case into Court again on an appeal to the United States Circuit Court of Appeals, and tried to get it first on the docket, so that it would come before two of the same judges who had previously sustained it. This made it necessary for us to go to New York, where we fought their mo-

tion and the Court refused their request. However, the following week the Court allowed them to enter their case on the docket, and, to our surprise, they succeeded in our absence in getting the case set for a hearing on May 14th, ahead of the rightful time. We received notice on Tuesday, the 12th, so that we were compelled to hurry to New York again to try the case.

Judges Wallace and Shipman, however, declined to serve, as they had decided the patent years before, and appointed Judges Lacombe and Townsend, the case being argued before these two judges instead of three, as is the usual custom of that Court. The result of this suit will not be known for some weeks, at least, so that we can only wait for the decision before taking any further steps. Should we be successful it would end all litigation in that Federal Circuit. If those who are trying to break up the Protective Association thought it advisable and advantageous to them, however, they could bring suits in any of the other Federal Circuits on the same patent. Should they win the suit now pending they would certainly try the case in other Federal Circuits. What our action would be in that event it is not advisable to make public. One thing is certain, however, we will not give up the fight, and all we ask is, that the members stand firm.

Because of the great expenditure of time and money necessary in defending these suits, we have fully decided not to protect any one who is not a member of the Protective Association.

THE ILLINOIS STATE DENTAL SOCIETY.

The recent meeting of the Illinois State Dental Society at Springfield demonstrated two things; one which every dental meeting demonstrates, viz.—that society work is of inestimable value to the members; the other, which is every year becoming more apparent to thoughtful men in the State, viz.—that the membership of the society is not proportionate to the number of dentists in the State.

It is estimated that there are, in round numbers, two thousand dentists in Illinois, and a membership of only two hundred in the State society falls short of constituting a truly representative organization. It seems incredible that members of the profession

in the State can remain so blinded to their own interests, and to the general advancement of the profession, that only one-tenth of the whole number practicing are members of the State society.

This organization is one of the most progressive and efficient of any of its kind in existence, and its reputation as a hard-working body extends far beyond the borders of this State. The published transactions contain much valuable information in every issue, and this is supplemented greatly at each meeting by the social and professional intercourse of its members. Some of the best names in the profession are on its roster, and to be connected with these men in society work is no mean privilege.

Nor is the Illinois Society an exclusive body. Any dentist of reputable bearing in the State may become a member. The stringent rules for admission at one time in vogue are well-nigh done away with, and the present sentiment seems to be, "the greatest good to the greatest number." It has been some time since the Board of Examiners of the society has demanded an examination for admission, whether the applicant possessed a diploma or not. This matter is made discretionary with the Board, and in recent years the Board has taken the stand that no reputable man, coming recommended by two of his fellow practitioners in the society, should have his ability questioned by an examination. The consequence is, that many men are made eligible for membership who would not care to submit to an examination.

In view of all these facts it seems strange that the society should have such a limited membership. It may be claimed in extenuation that the percentage of society members in the dental profession is fully as large as that in the medical profession—possibly larger. But this is not a sufficient argument to admit of our being content with the present order of things. If we can outstrip our medical friends in society work, so much the better.

At the recent meeting a movement was inaugurated tending to increase the interest of the profession throughout the State in this matter, and it is hoped that at the next meeting the society will receive a large acquisition. We make a plea for all those who are not connected with the society to take this subject under advisement, and we feel sure that an investigation will prove the

benefits to be derived from society organization. No progressive man can afford to ignore the State meeting. Come in and give us the encouragement of your presence and you will receive a tenfold advantage in return.

Book Reviews.

THE PRINCIPLES AND PRACTICE OF DENTISTRY, including Anatomy, Physiology, Pathology, Therapeutics, Dental Surgery and Mechanism. By Chapin A. Harris, M. D., D. D. S., late President of the Baltimore Medical College, author of "Dictionary of Medical Terminology and Dental Surgery," thirteenth edition. Revised and edited by Ferdinand J. S. Gorgas, A. M., M. D., D. D. S., author of "Dental Medicine," editor of Harris' "Dictionary of Medical Terminology and Dental Surgery," Professor of the Principles of Dental Science, Dental Surgery and Prosthetic Dentistry in the University of Maryland. With twelve hundred and fifty illustrations. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street, 1896.

This is the thirteenth revised edition of a work universally known and used as a text-book by dental practitioners and students. It is published by the well-known firm of P. Blakiston, Son & Co., and is gotten up in their usual superior style.

The editor, Dr. Ferdinand J. S. Gorgas, has shown a vast amount of industry and zeal to give to the profession a work fully up to the present advanced standard of dentistry in all its branches. Many chapters are rewritten, and nearly all are added to, and the book commends itself at once to the practitioner as a necessity to his library.

THE DISEASES OF CHILDREN'S TEETH; THEIR PREVENTION AND TREATMENT. A Manual for Medical Practitioners and Students. By R. Denison Pedley, M. R. C. S., L. D. S. Eng., F. R. C. S. Edin., Dental surgeon to the Evelina Hospital for Sick Children, Southwark, London. With numerous illustrations. Published, London, 1895: J. P. Segg & Co. America: S. S. White Dental Mfg., Co., Philadelphia. 12 mo. cloth, 268 pp.

This English work is eminently what it claims to be—a handy manual for the country medical practitioner and student, giving a general and useful scope of knowledge concerning the development and growth of childrens' temporary teeth in the ordinary stages of dentition. The hints as to methods of treatment, saving and extracting are augmented by the illustrations. While many of the ideas advanced are not in accordance with current dental literature, yet to the general practitioner the work is of great value. The author has laid a foundation for a good work and the second edition can be made of greater use.

Notices.

COLORADO BOARD OF DENTAL EXAMINERS.

The Colorado State Board of Dental Examiners will hold their next meeting June 9-11, 1896, at the office of W. E. Griswold, 401 Mack Block, Denver, Col. All applications should be addressed to D. Murray, Secretary, 421 Mack Block, Denver, Col.

CALIFORNIA STATE DENTAL ASSOCIATION.

The California State Dental Ass'n. will hold its next annual meeting at Santa Cruz, commencing the second Tuesday in June, 1896. We are always happy to entertain members of the profession from abroad, and hope on this occasion to have a large number with us to enjoy this delightful retreat.

W. C. REITH, Cor. Sec'y., Sacramento.

WISCONSIN STATE DENTAL SOCIETY.

The twenty-sixth annual meeting of this society will be held in the Senate Chamber, Madison, Wis., July 21-23, 1896. An exceedingly interesting program is being prepared by the executive committee, and a most earnest invitation is extended to all reputable practitioners in the State to attend and unite with us if possible.

W. H. CARSON, Sec'y., Milwaukee.

INTER-STATE DENTAL ASSOCIATION.

The joint meeting of the State Dental Associations of Iowa, Nebraska, Kansas and Missouri, to be held at Excelsior Springs, Mo., June 23-26, promises to be one of the largest and best meetings ever held in the West.

The most eminent dentists of the four states will be present and participate.

That paragon of hotels, "The Elms," has given us greatly reduced rates,

and all railroads give one and one-third rate on the certificate plan. Be sure and secure receipt in going; if you travel over more than one road, take a certificate from *each*. It will be impossible to get reduced rates in returning without certificate.

For information or program address—S. C. A. Rubey, Sec'y, Clinton, Mo.

CINCINNATI ACADEMY OF DENTISTRY.

At the regular monthly meeting, held Monday evening, April 27, 1896, the following officers were elected for the ensuing year:—President, W. T. McLean, M. D., D. D. S.; Vice-Pres., A. I. F. Buxbaum, M. D., D. D. S.; Secretary, Wm. Lockman, Jr., D. D. S.; Treasurer, J. F. Clayton, D. D. S.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-second annual meeting of this society was held at Springfield, May 12-15, 1896. A good program was carried out and a large attendance was present. The following officers were elected: Pres., C. R. Taylor, Streator; Vice-Pres., E. B. David, Aledo; Sec'y., Louis Ottofy, Chicago; Treas., E. D. Swain, Chicago; Librarian, J. R. Rayburn, Fairbury. The next meeting will be held at Peoria, beginning the second Tuesday in May, 1897.

AMERICAN DENTAL SOCIETY OF EUROPE.

The American Dental Society of Europe will hold its twenty-first annual meeting at Dresden, Germany, Aug. 3-5, 1896. All members of the profession who plan to be in Europe at that time are cordially invited to attend. Further information can be obtained of the President, Dr. John H. Spaulding, Paris, or of William A. Spring, Secretary, 26 Christian Str., Dresden.

KENTUCKY STATE DENTAL ASSOCIATION.

The Kentucky State Dental Ass'n. will hold its annual meeting in Louisville, June 16-19, 1896. A cordial invitation is extended to all members of the profession in good standing to be present.

The State Board of Dental Examiners will meet at the same time and place for the examination of candidates and such other business as may come before it.

J. H. BALDWIN, Sec'y.

COMMENCEMENT OF THE OHIO COLLEGE.

The fiftieth annual commencement of the Ohio College of Dental Surgery was held Tuesday, April 14, 1896, at 8 P. M. The program was:—Music; Prayer; Conferring of Degrees and address, Dr. Frank A. Hunter, Pres. of Board of Trustees; Music; Awarding of Prizes and Remarks by the Dean, Prof. H. A. Smith; Music; Address, Rev. E. Trumbull Lee, D. D.; Music; Class Address, Fenimore Roudebush, Ky.; Music. Matriculates 215, Graduates 47.

News Summary.

THE PALISADE MFG. Co., of Yonkers, N. Y., were well represented at the Illinois State Dental Society, at Springfield. Mr. Stephen Hexter, their western agent, distributed a large number of samples of "Borolyptol," and dispensed "Kola Cardinette" to all tired and weary dentists after the clinics.

INCISIONS OF FACE.—Incisions made in the skin of the face should be placed where there is a shadow, or in the bottom of the furrows produced by the habitual expression of the patient. When this cannot be done, the incision should be parallel to the facial line rather than across it. A slightly curved incision makes a less conspicuous scar than a straight or abruptly curved one.
—*Roberts.*

GUTTA-PERCHA.—PROF. GRAY has recently adopted a very satisfactory method of using gutta-percha. After drying the cavity he saturates it with common resin cut in chloroform and then presses in heated gutta-percha. It adheres to the walls like cement and does not pull away. He has found it very satisfactory in the mouths of his own children where he has the opportunity of observing it closely.—*Brit. Jour. Dent. Sc.*

"GAS" FROM THE MAIN.—A medical man was rung up about 1 a. m. by a man who complained of toothache, and wished to have chloroform administered. The doctor explained that without proper preparation and assistance this was out of the question. Then the patient demanded Gas, and was informed that he was talking not to a dentist but to a medical man, who did not keep the necessary appliances in his house. "Gas," said the patient, "have you not a meter?"—*Brit. Jour. Dent. Sc.*

DENTISTRY IN GERMANY.—According to a communication which appears in *L'Odontologie*, the total number of persons practicing the Dental art in Germany is about 3,600. More than 3,000 are mechanical dentists without a diploma; 205 are dental doctors or surgeons with foreign diplomas, while 408 are barbers, jewellers, etc. None of these may take the title of *Zahnarzte* under a penalty of 300 marks fine. The *Zahnarzte* number 977 and have all obtained a diploma from a German university.

CALCAREOUS FOOD AND BONES.—Dr. Miller narrates that he fed two puppies, of the same litter, the one on food stuff poor in calcareous matter, and the other on an ordinary diet. After six weeks the bones of the latter were quite normally developed, but the tubular bones of the latter were extraordinarily thin and soft, the epiphyses being like little sponges, which could be crushed between the fingers. But he did not notice that the teeth of this animal had developed more slowly or less perfectly than those of the dog fed in a normal way.—*Dental Record.*

IN HIS PALMY days John Bright was fond of expatiating on the wonderful growth of the United States in material resources, and of demonstrating that its wealth was multiplying by leaps and bounds. We are reminded of the orator's favorite theme by the announcement that Parke, Davis & Co. have opened two new branch houses to satisfy the rapidly growing demand for their

preparations—one in New Orleans and another in Baltimore—and by the receipt of their '96 price list, comprising over six thousand items and twenty-nine distinct lines of preparations! It is amazing, how this house has grown within the past fifteen years. It has been erecting laboratories by the acre, multiplying its branches and agencies, and increasing its output of pharmaceutical preparations by the ton! The ground for this amazing prosperity is not hard to find—scrupulous integrity, dignified, honorable business methods, and, above all, a strenuous desire to treat professional men in accordance with professional methods. All the world knows that the label of this firm is a warrant of purity, activity and precision in the contents of the container, and the physician realizes that in his grim battle with disease he can depend upon Parke, Davis & Co.'s preparations every time!

DR. SCHLEICH'S METHOD OF PRODUCING LOCAL ANÆSTHESIA.—He uses the following solution:

R Cocainæ muriatis	1.00
Morphinæ muriatis .....	.25
Sodii muriatis	2.00
Aquæ destillat.....	1000.00

M.

The maximum dose is, as a rule, 50 cubic centimetres containing .05 gram or $\frac{3}{4}$ grain of cocaine. It is injected into the tissues by means of a hypodermic syringe.—*Medical Record*.

STAGES OF ETHER ANÆSTHESIA.—When produced by inhalation there are four stages of anæsthesia. (1) The stage of stimulation, characterized by excitement and a pleasing intoxication. (2) The anodyne stage, characterized by impaired sensation, retained reflexes, delirium, which is most marked in robust individuals, tetanic contraction of the muscles, turgescence of the face, etc. (3) The anæsthetic stage, characterized by the abolition of the ordinary reflexes and of all conscious excito-motor sensibility. (4) The paralytic stage, characterized by diminution of unconscious excito-motor sensibilities, and, finally, by death from paralysis of the respiratory centre.—*John Chalmers da Costa*.

SODIUM CHLORIDE FOR RELIEF OF PAIN.—In five adult cases of face-ache from decayed teeth, insufflation of sodium chloride into the nasal cavity caused the pain to disappear at once. Numerous cases of severe headache, without regard to cause, and two cases of earache which did not call for more special treatment, yielded immediately to this remedy. A physician, complaining of headache and painful feeling of strain of the eyes, due to reading and work with the microscope, was promptly relieved by the insufflation. The dose employed was two to four grains of finely ground table salt, blown into the nose just after an expiration.—*Quarterly Medical Journal*.

FORMALIN IN DENTISTRY.—Lepkowski announces in the *Przegląd Lek.*, 1895, Nos. 20 and 22, that he has found formalin very effective in cases of acute pulpitis, when even after the tooth has been filled the pain ceases in a few hours. Also after extraction of the sound pulpa, in cases of incipient periostitis, and where the pulpa is changed into an ichorous mass. He first cleans the teeth as perfectly as possible and then introduces a cotton wad

dipped in formalin, which he covers with a staniol plate, on top of which he puts the complete filling. A moderate pain follows for several hours, if the nerve had not been entirely killed. Formaldehyd kills the sound pulpa completely, with no greater pain than accompanies the use of arsenic paste, with this advantage that the tooth can be filled at once, without further cleaning. He hopes that this treatment will be found all that he expects from it at present.—*Centralblatt f. Chir.*, February 8.

THE INTOXICATING PRINCIPLE IN ALCOHOLIC BEVERAGES.—At a recent meeting of the Academy of Medicine, says the Paris correspondent of the *British Medical Journal*, M. Daremberg stated that pure alcohol at 10° is less toxic than impure alcohol, such as *eau de vie*, and above all old *eau de vie* made from wine at 10°. *Eau de vie* made from wine at 10° is less toxic than wine at 10°. *Eau de vie* is in fact wine purified. The intoxicating element in wine is not present in the part distilled, but in the residue. Red wine is more intoxicating than white wine; the latter is produced by the fermentation of the juice of grapes, whereas the red wine is the product of the fermentation of the juice, skin and pips of grapes. It is the bitartrate of potassum which constitutes the special intoxicating principle of red wine. French beer contains five per cent. of alcohol; fifty cubic centimetres injected into the veins of a rabbit produced no result. The different varieties of cider, on the other hand, were generally very intoxicating. M. Daremberg injected alcohol into the veins of rabbits rendered tuberculous three days previously. Alcohol chemically pure did no harm, but *eau de vie* and wine killed them rapidly. The wisdom of giving alcohol to tuberculous patients is therefore doubtful. The toxic quality of alcoholic drinks is not thoroughly evident when there is neither kidney nor liver trouble. Healthy subjects easily eliminate these toxic substances, which under certain circumstances may even be valuable as occasional stimulants.

A NEW ANTISEPTIC—LORETIN.—Dr. Herbert Snow, surgeon to the London Cancer Hospital, speaks in the highest terms of loretin as an antiseptic. It is an iodine compound, acid in nature, and forms compounds with sodium that are soluble in water. Dr. Snow says (*British Medical Journal*): "My own experience is confined to the powder, which I have never found occasion to mix with any other substance. Dusted on the skin, or over a granulated wound, this causes not the slightest irritation or unpleasant sensation. It immediately destroys the malodor of the most fœtid cancerous sore, controlling this in a manner which no other agent I have yet tried will do. Copiously puffed with an insufflator into the deep cavity formed by evacuating the axilla of carcinomatous glands, it efficiently precludes suppuration, even when free hemorrhage has taken place after the closing of the wound, an occurrence almost inseparable from anæsthetic vomiting when the patient has been removed from the operating table. Not the slightest bad symptom from its employment in this way has so far been detected. When there is no deep cavity, a wound dusted with loretin heals rapidly by first intention. I have had recourse to loretin in some sixty cases, mainly operations on the breast and axilla, notoriously a test region for antiseptics. In my hands it has proved an ideal antiseptic and deodorant, with no single drawback; and I am sure that no surgeon who has once tried it will ever again resort to the noisome and toxic iodoform, from the free use of which I have seen more than one death."

The Dental Digest.

Vol. II.

CHICAGO, JUNE, 1896.

No. 6.

Original Contributions.

AMALGAM AND CEMENT FILLINGS.

By W. E. DRISCOLL, D.D. S., MANATEE, FLA.

In the April DIGEST Dr. S. B. Palmer, under the head of "Improved Amalgam Fillings," says: "Introduce the filling as quickly as possible, so as to force out any excess of cement. Dry the cavity borders and fill as usual. With this lining there is no thickness of cement to wash out, nor is there a space for fluid circulation to cause the chemical shrinkage mentioned."

This is the longest reference to lining cavities with cement that I have ever seen in a dental journal, except what I have contributed during the past nine years. If the general understanding of the matter is as faulty as I take Dr. Palmer's reference to it to be, I am not surprised that no one writes on the subject, or that one would surmise there was no such thing practiced, so far as the dental journals refer to the question.

Dr. Palmer may know of a cement that will wash out from under an amalgam filling, but I do not, though I know of several that will not do so. I do not understand his fear of getting too much cement under an amalgam filling. It may be possible to make cement so thin that it would wash out if largely exposed, but I cannot see why anyone would practice such a plan. If the pulp is not exposed there is no objection, according to my observation, to mixing the cement lining as stiff as will allow time to press in a block of amalgam before the cement loses its stickiness. The protection the amalgam covering gives to the cement causes it to harden far beyond any cement filling left in a cavity with no protection.

I will repeat what I have said before. The silence of the dental journals on the subject of cement linings for amalgam and gold fillings is one of the wonders of the times. I have not inserted an amalgam filling for eight years without cement under it. And I have often written that I believed the time would come when the insertion of amalgam in cavities without cement or other suitable lining would be considered malpractice. I expect to be compelled to make a trip of nearly one thousand miles to reach a dentist who knows how to do this kind of work right, whenever I need to have my own teeth operated on. There may be others who understand the matter, but if they should write as Dr. Palmer does, I would say that they have had no such success in lining cavities with cement as I have had for nine years past.

REMOVAL OF PULPS, AN IMMEDIATE AND NEARLY PAINLESS METHOD.

By F. J. FESLER, D. D. S., LOWELL, MASS.

The writer, during a practice of seventeen years, has seen published in various dental journals many articles which it seemed everyone should be familiar with, methods which I had been using in my own office for years. The fact, however, that these means and methods were not new to me, did not prevent the authors of them from conveying something of help to some younger or less experienced men in the profession, who had not had their attention called to the particular point in question. This may be the case with what I am about to write.

Some men may be able to tell me something better for destroying the pulps in teeth, but with me it works so satisfactorily that I wish others, who may be progressing in the old way taught at the colleges and in the text-books, to be benefitted. If I can help even one practitioner, and I am sure I will reach many who as yet have not adopted this method, I will accomplish all I desire. Some of the more conservative will probably criticise me for using so strong a mixture. I will not ask them to use more strength of solution in all cases than they find necessary, and am myself ready to accept any suggestions that tend towards improvement, if backed up by the experience of a fair number of cases and not by mere speculation. With this preface, and a hope to read in

the near future the experiences of other men, either as the outgrowth of ideas from this article or original suggestions of their own, I will tell you as briefly as possible what to do when you meet that formidable little enemy, a live or partially live pulp.

Go to your druggist and ask him to make a solution of muriate of cocaine in this way. Take a test-tube in which ten grains of muriate of cocaine have been placed, and add one drachm of distilled water, then bring to a boil, cool and place in a vial for use. You can do this in your own office if you choose. Now when occasion presents itself, put the rubber dam over the tooth to be operated upon and tie it, or in some way make it so tight that none of the solution will go through into the mouth or on the gum, and I think a clamp is the most reliable to prevent displacement by any sudden movement of the patient. If the pulp be alive and not exposed, so that it cannot be readily reached with a hypodermic needle, take a small drill, the same size as the needle, and open just to the pulp. Then take into your syringe a quantity of the cocaine solution and place one or two drops in the cavity in such a way as to numb the pulp to the entrance of the needle. This can usually be accomplished in one or two minutes, so that but a very little pain will be felt on entering the needle, say a thirty-second of an inch into the pulp. This may also be accomplished by touching the exposed pulp with a 95 per cent. solution of carbolic acid.

Now after entering the needle use gentle pressure, injecting the solution and pushing the needle further into the pulp as fast as sensation is lost. The whole operation of anesthetization may be completed in from three to five minutes, so that a hook broach can be carried to the end of pulp-canal and turned around, thus amputating the pulp, to be afterwards removed with a barbed broach, by a broach wound with cotton, or in any way you may see fit. Any hemorrhage may be stopped with carbolic acid.

I am in the habit of filling my hypodermic syringe, then place it in position, the needle point just at the entrance to the canal, and while it is held in that position place enough of Gilbert's temporary stopping, which has been previously warmed, around it to fill the cavity. This is applicable to those cases where the nerve is partly alive, receded, or the cavity is so large as to allow much of the liquid to flow back and so not enter the pulp. It

will be found necessary where the pulp extends to two or more roots, so that enough pressure from the syringe may be exerted to force the solution throughout them all, or each root may be treated separately. Each case will present conditions requiring slight differences in manipulation which will readily suggest themselves. The operator should always use care if he has any cuts or abrasions on his hands that the solution does not get into them, and the hands should be immediately washed if free from cuts.

The filling may be inserted at once in all cases where the pulp has been immediately exposed and removed, or where the upper half of the pulp was healthy when removed, although it might be well to treat the last named case with a little carbolic acid or other antiseptic. There are many cases, particularly of lateral incisors, which present so little space to anchor a temporary filling, that this method is far preferable, and as the permanent filling can be immediately inserted, considerable experiment is warranted. Of course one should be very cautious, if the least suspicion of a large apical foramen be present, that none of the material be carried through into the surrounding tissues.

Some may question whether the action of the cocaine is not injurious to the tooth. Well, five minutes of cocaine is not equivalent to hours of arsenical preparations in bone and nerve tissue, to say nothing of the hours of pain while arsenic is encased within a tooth. Had I known the benefits to be derived from this method years ago it would have been a priceless boon to me, besides being a great saving of time and pain to my patients.

AN ACT OF DENTAL UNCLEANLINESS.

BY A. R. CHURCH, D.D. S., CHICAGO.

Many dentists are extremely careful to have their instruments thoroughly sterilized after every operation. They wash their hands carefully and have their nails manicured, but use modeling compound and wax for impression work from mouth to mouth until it becomes fairly filthy.

Science has shown that the mouth is almost a perfect incubator for the growth of micro-organisms of all kinds. What an injustice men of our profession are doing the public in transferring germs of disease from one person to another in this manner.

If infection can be carried on the small point of a delicate excavator or lancet, what a risk a practitioner of dentistry runs in placing a mass of compound in the mouth, which has been used, for instance, on a syphilitic patient. Some may say the excavator, scaler or lancet is a different thing, for it comes in actual contact with wounded and bleeding tissues, while the impression material does not. How about partial impressions taken after removal of deposits on remaining teeth, after extractions, and after the preparation of roots for crown or bridge work? Even if the tissues be not wounded, what dentist with his knowledge of bacteriology would run the risk of placing in his own mouth a substance which has been used on a patient having *Pyorrhœa Alveolaris*? Aside from danger from infection, which one of your patients would knowingly consent to your using compound or wax which had been used in the mouth of another, no matter how clean or healthy the mouth may have been?

I do not think modelling compound can be sterilized in the short time it is in contact with warm water. To destroy the life of many germs it would have to be boiled for such a length of time that the material would become useless. Wax may perhaps be rendered aseptic by long boiling, but this is not done by the majority of dentists, very seldom by any until it becomes necessary to eliminate plaster.

All colleges should teach students that it is almost as dangerous to use compound twice as it is to use instruments without being properly sterilized.

If some one better qualified to treat this subject than myself will devote some of his time to it, this short article will have served its purpose. It seems to me fully as important as many of the subjects recently brought before the notice of the profession through the journals. Much has been written on care in sterilizing almost everything we use in the office, even to the operator's coat, but little or no attention has been given to impression materials. It is of little use to sterilize your impression cups if the contents are not also pure and clean.

All dentists may not be guilty of uncleanness in this respect, but I believe the majority are. Among them are many who are very critical on other points in office practice.

Digests.

The Medical Standard for May, 1896.

"FRUIT DIET DURING PREGNANCY." There is a theory that in proportion as a woman subsists during pregnancy upon aliment which is free from earthy and bony matters she will avoid pain and danger in delivery. Hence the more ripe acid fruit in particular, and less of other kinds of food, particularly of bread and pastry, of any kind is consumed, the less will be the danger and suffering from childbirth. Dr. E. A. Geer finds that the fruit diet benefits the mother at the expense of the child, which is born rickety.

Dr. E. Page of Boston, Mass., reports good results from a diet consisting chiefly of fruits (especially the sub-acid kind) and vegetables plainly served, interdicting the use of pies, pastry, cake, tea and coffee, a good degree of exercise, air bath for a few minutes on rising and retiring, a cold sitz bath of ten to thirty minutes on rising, great moderation in sexual indulgence, treating the "morning sickness" as an ordinary indigestion. A lady writes to *Babyhood*: "I gave fruit diet a thorough trial in the hope of finding labor painless, but do not see that it made any difference in regard to the labor, although my general health was good. But the poor baby—from the time he was six months old until he cut his last tooth there were days of fretfulness and restless, wakeful nights. Every tooth had to be lanced. He is now, at the age of seven, a slender, nervous, fretful child, while his two little brothers, not fruit-diet boys, are sturdy and serene." When a woman is in the best physical trim she is in the best condition to have as painless a labor as she can have. Any physician who has a fairly large experience knows that it isn't the size of the foetus nor the degree of ossification that constitutes the chief element in difficult labors. Many a mother has her hardest labor with her smallest child. If the mother is so fed that the child can get what it needs without drawing on the teeth, bones and nervous muscular system of the former, if she exercises sufficiently to keep herself and the foetus from becoming obese and her muscles from becoming flabby and inadequate to the exertion of labor, there need be but little

worry. In cases where indicated, the mother should be fed on chalk and ground bone, with the most excellent results as compared with her other pregnancies. Dr. E. Smith, of Oxford, Kan., relates a case in which a woman was booked to have a foetus with soft bones and yielding cranium, as she had abstained from bone-forming food. She lost her teeth during gestation. The foetus had united cranial sutures and had to be delivered with forceps.

Pacific Stomatological Gazette for May, 1896.

"NATURAL ENAMEL INLAY," by A. H. Wallace, D. D. S., F. C. S., San Francisco. The large, unsightly, restoration gold fillings in front teeth, which were once thought to serve as monuments to the dentist's skill, are familiar to all of us. They are put in at a sacrifice of the personal appearance of the patient, who will soon realize that there is something at hand which will replace gold for the front teeth. Therefore, the time will soon come when our patients will demand porcelain work, and natural enamel where it can be done, which will then entirely supersede gold. With our dental furnaces for baking porcelain it is very easy for us to put in a porcelain filling approximately the color of the tooth, but how much more beautiful is the natural enamel with its life-like lustre and natural contour?

Many skeptics will question the durability of such work, and cite the decay of the enamel, the washing away of the cement, and the breaking away of the inlay from its anchorage as objections. The first of these objections is very well taken, for the enamel is liable to decay; but if it should decay in three to five years (and I say this would be a good limit to healthy enamel), take it out and put in another piece, and the patient will be well repaid for the years he has been exempt from the glare of gold. The other objection—the washing away of the cement—cannot be considered as such, as there is no cement to wash away in a properly fitted inlay; and if there is, watch it, and have it replaced before the decay commences. The last objection, breaking away from its anchorage, is liable to occur if we use poor cement and are careless in its mixing and setting; but this will never occur in proximal cavities where the cutting edge is not involved. In cases where the cutting edge is involved to the extent of one-half or one-third of the tooth, resort to a gold pin for better anchorage.

An inlay is applicable to four kinds of cavities: proximal cavities in the front teeth, with or without involvement of the cutting edge, in labial and buccal cavities. When the cutting edge is not involved, and inlay well fitted, it will last a lifetime. When the cutting edge is involved the case becomes of a most serious character, and inlay depends wholly on the anchorage for its stability. In this event I make the inlay as large as possible, without cutting away too much of the tooth, and make a perceptible shoulder at the cervical boundary.

On the labial surface, when properly fitted, the inlay will last longer than gold. In a case where I have restoration of one-half or one-third of a tooth, I depend on one or two gold pins for anchorage, and the placing of a whole natural tooth-crown on the front teeth is very effective.

The advantages I claim for this are: *first*, the natural color assumed from three days to two weeks after the operation, the same as implanted teeth; *second*, the natural contour of the tooth restored; *third*, strength, non-friability; *fourth*, the artistic value when properly done.

The methods I sometimes use to obtain these results are, *first*, rotation of the tooth with ligature (Younger's method) so as to bring the mesial surface to the front; spreading the teeth with cotton tape; porcelain inlays in small cavities; and, if tooth is dead or discolored, bleaching to normal color with pyrozone.

In selecting a tooth to cut inlay from, care should be taken to get a tooth nearly the size and shape of the one to be operated upon. This can be determined by the aid of calipers. After selecting the tooth, give it a bath of iodine to cleanse it and then let it remain in a solution of bichloride of mercury (1 in 2000) for twelve hours. The *modus operandi* after this is to grind with fine stone to approximately the size, then mount it with shellac to an instrument so as to give access to cavity.

A perfect fit can be obtained by smearing the cavity with rouge and oil, and by placing the inlay in it, grinding away a little of the inlay at a time just where it comes in contact with enamel walls. After it is fitted, wash out cavity with soap and warm water to remove oil, then thoroughly dry and, using best cement, cement to place, care being taken not to displace inlay

after it has begun to set. Trim off so that inlay will not strike antagonizing teeth, and you will have a filling that will last as long as gold, and will be a pleasure to yourself and your patient.

"DENTAL JURISPRUDENCE, ANESTHESIA," by H. R. Wiley, A. B. San Francisco. It is a well-settled principle, both in this country and in England, that any person in the practice of his profession is required to possess and use ordinary skill, and to exercise ordinary care.

To determine just what constitutes ordinary skill, and to determine whether or not a dentist, in a given case, has exercised ordinary care, are questions which the courts have found to be attended with considerable difficulty. That which might be held to be ordinary skill under certain conditions, might under other circumstances be regarded as ignorance; and a degree of care that might be considered ordinary in the simpler operations of dental practice might justly be regarded as negligence when applied to the management of an operation attended with a high degree of danger to the patient.

The law admits that a qualified practitioner of dentistry has the right to administer anesthetics, but it will inquire searchingly as to his knowledge and his methods, as well as to the degree of care exercised by him in administering them. Unless a dentist knows himself to be well qualified in this branch of practice it is best that he procure the services of a physician to make a preliminary examination of the patient's physical condition, relative to the use of the particular drug that he intends to administer, and to note, also, the effect upon the patient while being put under its influence. This rule a dentist should observe as a duty both to himself and to his patient, and he disregards it at his peril. A dentist may, himself, safely undertake to administer an anesthetic only when he has a thorough understanding of its physiological effects, and knows himself to be fully conversant with the most approved methods of administering it. This the law holds to be ordinary skill.

"Ordinary care" in the use of anesthetics means great care.

If, in the opinion of the dentist, the operation is one that the patient may easily undergo without the use of an anesthetic, he should advise against its use. If it is decided to resort to anes-

thesia, then, if nitrous oxide gas will suffice, it should be used, as it is considered less dangerous than chloroform or ether. Out of the hundreds of thousands to whom nitrous oxide gas has been administered since it came into general use in the medical profession, only thirteen fatal cases had been reported prior to the year 1892. This is a small number of deaths compared to the lists that are recorded against either chloroform or ether.

Before administering an anesthetic the dentist should carefully examine his patient, especially with reference to faulty circulation, and if, in his opinion, there are good reasons for not using the drug he should firmly refuse to do so.

The law would hold a dentist unskillful or negligent if he administered cocaine to a nervous and hysterical person or to a pregnant woman.

The dentist should always have at hand the usual restoratives, such as brandy, aromatic spirits of ammonia and nitrate of amyl.

"EROSION AND ABRASION," by Dr. L. A. Teague, San Francisco, read before the S. F. Dental Association, May 11, 1896. In my treatment of this subject, viz., the agencies that cause the wearing away of tooth structure, I also touch upon one that is said by some to be kindred to erosion—that is, atrophy of the teeth; and, if it will serve to bring out the truth as to the cause of these diseases, I will, for the sake of argument, throw down the gauntlet and claim that they are not congenital, but the result of sickness during dentition in the case of atrophy, aciduous agencies in erosion, and mal-articulation in abrasion.

In the February No. of the *Gazette* appeared an excerpt from the *Items of Interest* anent "Abrasion of the Teeth and the Tooth-brush," and as I read it I was struck with astonishment at the absurdity of some of the crimes that were attributed to tooth-brush and powder.

To begin: the wasting away of the tooth-substance *attributed* to the brush is not abrasion, but erosion—an eating away, by caustic or aciduous agency, of the enamel and dentine of the teeth. I am aware that this insidious disease has been diagnosed by some writers as resulting from mechanical agencies, such as scraping, shaving, rubbing or wearing of one hard substance by friction against another. •But that convenient reason will not do;

it is not scientific, it is not reasonable, and it is only plausible to those who do not stop to think and put two and two together. It will do for us to tell to those who inquire, when any answer will satisfy their curiosity. In fact, if we gave a woman's answer and said simply "because," it would as a rule suffice; but such answers will not do for those who, by observation and experience, are forced to the conclusion that a tooth that was never introduced to a tooth-brush could not possibly be contaminated or abraded by contact with it. Listen to this from the excerpt: "It is a shame to see the destruction of so many sets of nice teeth from this cause, and that of people who are taking special care of their teeth. It is still more especially a shame and a disgrace to the dental profession, because nearly all this sacrifice of beautiful teeth is by order of some of our most popular dentists."

Now, then, show me a mouth that knows no tooth-brush and I will show you a condition of things ten, yes, a hundred times worse than that of the mouth whose teeth are brought in vigorous contact with the brush once or twice a day. I will show you gums that are in an inflamed condition, loose around the necks of the teeth, exuding pus and red and angry in appearance, tartar deposited in greater or less abundance, eating away the support of the teeth, denuding them of gum and alveolus and playing such havoc that decay is a blessing in comparison, and yet "it is a shame" that dentists should recommend cleanliness in preference to this.

For the sake of argument, let us admit that the tooth-brush is the cause of the wasting away of the teeth along the gum line; then I would say that it would take a much longer time to bring about an endentulous condition of the mouth than is required by the simple neglect of prophylactic treatment.

We have some diseased conditions of the mouth that we have not yet been able to master; one, pyorrhea alveolaris, the *bete noir* of the dentist, whose severity we may mitigate, but can we cure? Another, erosion, a wearing away of the tooth or teeth, attacking them on the labial and buccal surfaces, and gradually and insidiously eating away the tooth, singly, and in pairs, working its way around until all are involved. Its work is clean and symmetrical as a rule, presenting a surface as polished as ivory and as shapely as the crescent moon. This condition, I think, should not be

confounded with abrasion nor associated with atrophied conditions.

Abrasion is caused by mastication, and is more or less pronounced as the articulation permits. Atrophy is attributed to diseased conditions, or, I might say, is a reflex of diseased conditions. A tooth in an atrophied condition would appear pitted and as if it were at one time deprived of proper sustenance. The text-books say that sickness during dentition leaves its impress on the teeth in this manner; that if a child should be twice sick, with perhaps an interval of a year or two between each illness, that the teeth will show a double row of pits corresponding with the time of such illness—that is, provided the disease is of a certain kind, for, if the pitted appearance were the result of any and all diseases of childhood we would none of us be free from atrophy of the teeth.

Now then, let us again consider the question of erosion and its treatment. First, shall we prevent? If so, how? I can think of no other way then that of systemic treatment, such as antacid medicaments. If systemic treatment will prevent, it will also arrest; but the repair must be mechanical, that is, to build up the breach by filling with gold or amalgam.

Of course, when we are confronted with teeth predisposed to erosive attack we cannot recognize that fact unless one or more of them has already begun to show signs of wear; we cannot, as yet, determine it by chemical analysis; if we could, the prevention might be easier of solution. Various experiments have been made, but nothing definite or conclusive has been discovered that will give a proper clue as to the cure.

The Therapeutic Gazette For May, 1896.

"PHYSIOLOGICAL AND THERAPEUTIC INFLUENCE OF CARBOLIC ACID," trans. from *Journal des Practiciens*. Pouchet recently contributed a paper with this title, in which he showed that the physiological actions of carbolic acid can be divided into local and general effects. Locally it is an energetic caustic, in dilute solution an irritant. In concentrated form, when brought in contact with the tissues, it causes rapid disorganization of the part and the formation of a hard mass which does not disappear for some time, while if one of the extremities be immersed in a com-

paratively weak solution of the drug a contraction of the capillaries and consequent pallor of the skin results, with a certain amount of local anesthesia—a stronger solution producing some preliminary burning. Upon the mucous membrane, the author reminds us, the acid causes first a sensation of burning pain, then anesthesia, leaving a white eschar. Full doses of carbolic acid internally may produce vertigo, roaring in the ears, tingling of the fingers, flushing of the face, increased salivation, and some sweating, besides the other well known toxic effects of the drug.

In regard to its therapeutics, Pouchet tells us that carbolic acid is best administered after adding to it small quantities of alcohol or glycerin, but he also points out that the addition of alcohol markedly increases the caustic property of the acid. There can be no doubt that for application to raw surfaces in considerable quantity, the concentrated form is far less dangerous than any dilution. This point has recently been emphasized by Dr. Allis, who states that where a dilute solution is employed the albumin in the tissues is not coagulated, and therefore the absorption of the drug readily follows; whereas if the pure drug is employed, its caustic effect is so great that a protective wall is formed through which large amounts of the acid cannot be absorbed.

The Dominion Dental Journal for May, 1896.

"A NEW THERAPEUTICAL REMEDY," by S. T. Andres, L. D. S., Montreal, read at Vermont State Dental Society, March 19th. In bringing before your notice a new compound of much value, called "Pheno-banum," I do so with strong confidence in its merit from long personal experience, which is further indorsed by the testimony given on its behalf by many leading dentists and physicians who have also tried it.

Dr. Henry Ievers, of Quebec City, to whom we are indebted for the discovery of this compound, sought for some preparation capable of destroying with certainty the microbes found in the human mouth, while also absolutely safe to use at all times, and he largely attributes this success to the complete absence of any ingredient which prevents its coming into direct contact with the parts affected, which the usual remedies sometimes fail to reach. That Dr. Ievers has succeeded in his efforts seems to be the universal opinion of leading dentists and prominent physicians who

have tried it, and I can strongly assert that I know nothing that relieves pain so quickly, and also protects a tooth from decay while any of the preparation remains in the cavity, even on cotton. These properties render it a valuable agent, that we can safely prescribe to our patients for emergencies when away from a dentist, for an aching tooth, or a tooth giving signs of threatened inflammation, and for parents to use in deciduous teeth that we are anxious to save, but which may be too badly decayed to be filled in the usual manner.

I have used this compound with complete success in many cases of most violent toothache, sometimes placing it directly in contact with the exposed and highly inflamed pulps, securing relief almost instantaneously, and subsequently capping and filling these teeth (with some of the same preparation mixed with a prepared zinc oxide), to my complete satisfaction, and in cases of threatened alveolar abscess, its use has proved by far the *most reliable* means of *aborting* the trouble that we have, proving far more efficacious than iodine and aconite or the capsicum plasters we have used heretofore in these cases.

I would strongly advise to have the patient directed to place a small plaster made from this material on the *dry* gum when feeling first symptoms of tenderness in *any* tooth, after crowning operations, or a tooth with a devitalized pulp, or one tender after the long operation of filling a large cavity, and have them renew it in two or three hours, if tenderness still continues.

For sensitive dentine, in some cases where the pain proves too severe to admit of further cutting, if you apply it on absorbent cotton packed tightly into the cavity and leave for a day, or longer if necessary, you will find a wonderful difference when you renew cutting of the dentine, or if you prefer you will give great relief by drying thoroughly and placing a little in the cavity and driving it into the dentinal fibrils with the hot-air syringe, and repeating when reaching sensitive dentine.

In ulcers of the mouth, tongue or mucous membrane, if dried thoroughly and then covered with this compound, *while dry*, it adheres without any other dressing, its insolubility resisting the fluids of the mouth and ordinary attrition of the teeth for ten to twelve hours, when a second application has in many cases cured sores that had persistently resisted other treatment.

This compound, when mixed with certain proportions of prepared zinc oxide, makes a splendid root filling, being unaffected by moisture, and never softening or disintegrating like gutta-percha, and can be made to reach the apex of small tortuous canals by mixing thinner than usual, and forcing it before a pellet of cotton. In these cases its germicidal properties are especially valuable. It also stands attrition fairly well when used as a filling for deeply decayed and sensitive cavities, and it insures perfect protection to the tooth tissue while *any* remains in the cavity, giving complete protection to the pulp (even when exposed), and may tide you over some delicate cases where you deem it inadvisable to be too thorough in the removal of decay, or unwilling to insert a metal filling at a certain time, and you can feel assured the tooth will be protected from irritation and decay until necessary to replace with a more permanent filling.

Journal of British Dental Association for May, 1896.

"CORROSION OF ALUMINUM," copied from *The Optician*. In order to ascertain the effects of the weather on ordinary sheet aluminum, Professor A. Liversidge has had two shallow dishes made of one twenty-fifth inch gauge metal, of the best commercial quality, and exposed on the roof of the laboratory, University of Sydney, from November 23, 1893, to December 7, 1894, or fifty-four weeks. The metal was made into basins so as to catch rain water, and to give the salts, etc., which it might hold in solution, an opportunity to act on the metal. The metal soon lost its brilliancy and became somewhat rough and speckled, with large gray patches; it also became rough to the feel, the gray parts could be seen to distinctly project above the surface, and under the microscope they presented a blistered appearance. This incrustation is held tenaciously, and does not wash off, neither is it removed on rubbing with a cloth. The raised parts are considered due to the formation of a hydrated oxide. Contrary to expectations, the cups had not lost weight, but had even increased. One weighing 13.91 gm. had increased by 0.104 gm., and the other, weighing 13.865 gm., increased by 0.080 gm. After boiling in water for some hours, and rubbing, the first still showed an increase of 0.77 gm. and the second of 0.055 gm. To ascertain the effect of common salt, a plate of the same metal, three

by four inches, and weighing 19.829 grm., was repeatedly dipped in a solution of sodium chloride and allowed to dry for three months; this lost 0.019 grm., and after washing and rubbing dry, 0.59 grm.

One reason for making these experiments is that Mr. H. C. Russell, F. R. S., the Government astronomer, some years ago tried aluminum cups for a rain gauge, but found that they were so quickly corroded through that he had to relinquish the use of the metal (if they had been gilt they might, however, have answered well enough). It is a very common thing to see aluminum recommended on account of its lightness and its assumed permanent lustre; this assumption being due to the statements repeated from book to book, that aluminum is unaltered by exposure to the air, to the action of water, hydrogen sulphide, and only slightly by dilute acids. The absolutely pure metal may be permanent in the air, but the best aluminum ordinarily obtainable is, in this respect (in Professor Liversidge's opinion) little, if at all, superior to zinc. The commercial metal does not retain its lustre, but very rapidly acquires the appearance of old zinc. Recently it has also been found that aluminum is acted on by sea water. Hence the claim, often advanced, that aluminum is a metal resembling gold or silver in not oxidising, rests on a slender foundation.

British Journal of Dental Science for May, 1896.

"ORAL SURGERY, STOMATITIS," by Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S. Eng. Stomatitis signifies inflammation of the mucous membrane lining the cavity of the mouth. In some cases the submucous tissue is also affected. The inflammation may be more or less limited to the gums (*gingivitis*), or to the tongue (*glossitis*), or may be distributed over more or less of the entire membrane. Stomatitis may be due to many different causes, some local, others general or constitutional.

The inflammatory process may present different features in different cases. It may be catarrhal, phlegmonous, exudative, ulcerative or gangrenous. Very often two or more of these processes occur either simultaneously or consecutively in the same patient, but usually one of them preponderates above the rest. It is best to classify cases of stomatitis according to the nature of the inflammatory process.

Catarrhal Stomatitis. In this condition the mucous membrane becomes congested and serum exudes into the sub-epithelial connective tissue, filters between the epithelial cells and oozes upon the surface. The epithelial cells multiply with abnormal rapidity and secrete an abundance of mucus, which mingles with the serum exuded from the deeper parts to form the characteristic watery and sticky discharge of mucous catarrh.

Catarrhal stomatitis may be secondary to any of the specific fevers, such as scarlatina, measles and small-pox, or to any inflammatory affection of the stomach or intestines. It may be the direct result of any form of irritation, such as that produced by rough or carious teeth, food which is too hot, too cold or too highly seasoned, excessive use of alcohol or tobacco, and in children the process of teething, etc. It may also be due to the internal administration of mercury or iodine.

The mouth is usually painful, especially when food is taken. At first it is dry and hot, but afterwards there is an excessive secretion of viscid mucus. Taste is perverted, impaired, or lost. The mucous membrane is red and swollen; the tongue is indented by the teeth and covered with a thick coating of fur, and its papillæ are red and swollen; the gums are swollen and of a deep bluish-red tint, and covered with a greasy secretion; the ridges behind the upper incisor teeth are swollen, reddened and tender. The disease usually runs its course in a few days, but may be more protracted if the exciting cause is allowed to remain.

Treatment. The cause must be discovered and removed. The diet must be limited to fluid or soft solid substances such as milk, soup, eggs, etc., and should be cold or luke-warm. An aperient is usually required.

The mouth should be frequently rinsed with a one or two per cent. solution of Chlorate of Potassium. Children who are too young to rinse the mouth should have it cleansed with cold water after each meal, and then painted over with a solution of borax (grs. 50 ad one ounce) or boracic acid (gr. x ad one ounce).

Phlegmonous Stomatitis. In this condition there is diffuse inflammation of the submucous connective tissue of the mouth. Exudation of serum and lymph takes place into the meshes of the connective tissue, leading to considerable swelling. The in-

inflammation may undergo resolution, or may proceed to suppuration, resulting either in the formation of localized abscesses or a diffuse purulent infiltration. Septicæmia or pyæmia may ensue.

The most frequent cause is injury, such as that caused by foreign bodies, or by blows forcing the cheek against the teeth; in such cases the wound becomes infected by some of the mouth bacteria. It may also result from extension of erysipelas of the face to the buccal cavity, or it may be secondary to typhoid or scarlet fever.

The disease is attended by considerable febrile disturbance and interference with the functions of the stomach and intestines. Speech and mastication are difficult and painful, and there is an excessive flow of saliva. The affected part is greatly swollen and tender to the touch; at first it feels hard, but subsequently becomes soft and can be indented by the finger. If the mouth can be opened sufficiently, the mucous membrane is seen to be red and swollen, and if there is a wound upon its surface it will look sloughy and unhealthy. Localized softening may indicate the formation of pus which sooner or later becomes discharged into the mouth.

When the tongue is the part affected it swells rapidly, becoming too large for the mouth, and protrudes between the teeth, or presses against the back of the throat, causing great dyspnœa; sometimes the swelling is limited to one half of the tongue.

Treatment. The swollen parts must be deeply scarified. When the tongue is affected great relief is afforded by making a longitudinal incision on each side of the dorsum. In other respects the treatment resembles that of catarrhal stomatitis.

Exudative Stomatitis. The characteristic feature of this kind of stomatitis is the presence of exudation (usually in the form of vesicles or pustules) upon the surface of the mucous membrane. Such vesicles and pustules may occur in the course of some of the specific fevers, such as small-pox. In diphtheria a croupous exudation may form on the buccal mucous membrane, similar to that found on the pharynx. For an account of these conditions a work on medicine should be consulted.

There are two varieties of exudative stomatitis which require description here, viz., *herpetic* and *aphthous*.

Herpetic vesicles may form on the palate, cheek or tongue, but are commonest on the lips, at the junction of skin and mucous membrane. Herpes labialis often occurs in association with pneumonia, rheumatic fever, influenza, acute nasal catarrh, and other febrile conditions. It may also be caused by local irritation, such as that produced by highly seasoned food, strong tobacco, etc.

The disease may affect either the upper or the lower lip, sometimes both. It begins as a crop of blisters varying in size from a pin's head to a pea; they develop very rapidly, and are at first clear and transparent, but after a few days become dim, assuming a greyish-white or greyish-blue color; their contents may become purulent. They are usually surrounded by a slight halo of redness. After a few days they shrivel up and form scabs. When the disease affects the mucous membrane the characteristic vesicles are not often seen because the elevated epithelial covering is macerated and shed in a short time, giving rise to superficial excoriations having a yellowish base and red swollen edges.

The treatment consists in administering a mild aperient; when the vesicles are situated on the skin they may well be left alone, but when on the mucous membrane they should be cleansed with a solution of borax or boracic acid.

Aphthous stomatitis is characterised by the occurrence of small, flat, whitish or cream coloured spots or erosions. They may result from the bursting of vesicles, suppuration of mucous follicles, or from small hæmorrhages in the mucous membrane. These spots may occur on any part of the buccal mucous membrane. They cause considerable pain and great sensitiveness of the mouth in eating, speaking, or smoking. Young children refuse their food and become poorly nourished. The treatment is similar to that of herpetic stomatitis.

Ulcerative Stomatitis.—Ulceration of the mucous membrane of the mouth may occur to a slight extent in the varieties of stomatitis already described. It may also occur in syphilitic and tubercular affections of the mouth; these will be considered separately. In this section three varieties of ulcerative stomatitis will be dealt with, viz., *mercurial*, *scorbutic* and *ideopathic*.

Mercurial Stomatitis results from the absorption of an excessive amount of mercury into the system (see mercurial necrosis). The mucous membrane becomes reddened and inflamed, especi-

ally the gum in the region of the lower incisors. The teeth appear lengthened and mastication is painful. The secretion of saliva is greatly increased and the tongue swells so that it may protrude from the mouth. The gums become swollen and spongy and retreat from the necks of the teeth; they bleed readily. The mucous membrane of the cheeks and gum becomes coated with a whitish grey membrane, on removing which deep irregular ulcers are exposed. If the disease persists the ulceration penetrates deeper and deeper until it involves the jaw, producing periostitis and necrosis.

The *treatment* consists in removing the source from which the system has become impregnated with mercury. The mouth must be cleansed by washes containing chlorate of potassium or boric acid. After the acute symptoms have subsided, the ulcers may be painted with tannic acid (grs. 50 ad one ounce), or with a solution of carbolic acid in tincture of rhatany (grs. 5 ad one ounce). The elimination of mercury from the system may be hastened by administering small repeated doses of iodide of potassium.

Scorbutic Stomatitis is one of the local manifestations of scurvy. It begins with pain, especially on mastication, and salivation. The gums become swollen and bluish-red, and project over and between the teeth; they are usually more or less ecchymosed, and sooner or later become ulcerated. The ulcers are irregular and covered by a dirty brown exudation; they bleed readily and copiously and emit a foetid odor. Similar ulcers may form on the cheeks, tongue and lips. The teeth may become loose and fall out.

The *treatment* consists in alleviating the disease by providing suitable food, especially fresh fruit and vegetables. The local treatment is the same as that of mercurial stomatitis.

Ideopathic Stomatitis occurs chiefly in children, especially those who are ill-fed, strumous or rickety, or those who live under unhealthy conditions. It is supposed by some to be contagious. It usually begins acutely by swelling and softening of the gum, which becomes covered by a yellowish, greasy, putrid mass. When this mass is separated an ulcer is exposed, spreading along the edge of the gum and bleeding readily. The cheek opposite the interval between the teeth is often affected in the same way. There is always profuse salivation, and the breath is very offen-

sive. Pain may be severe or quite absent. The general health is as a rule not much affected, and fever is slight or absent.

The *treatment* resembles that of the other varieties of stomatitis. Chlorate of Potassium is particularly useful. It should be given in full doses, a child of four years taking 30 grains a day.

Gangrenous Stomatitis.—Gangrenous Stomatitis (noma) occurs in sickly children living amongst unhealthy surroundings, and more especially during convalescence from the specific fevers, such as measles and scarlet fever.

It usually begins as an ulcer on the inner aspect of the cheek near the angle of the mouth. The cheek becomes swollen, brawny, red and shining. In the middle of the inflamed area there is a livid spot; this soon turns into a black slough, and is surrounded by a purplish mottling; it spreads with great rapidity and often involves the whole side of the face. The inside of the cheek is lined with tough adherent greyish-yellow or soft purplish slough. When the disease starts upon or involves the gums, the latter become red, spongy and ulcerated; the ulceration extends rapidly and is accompanied by the formation of dirty looking sloughs; the teeth become loosened and fall out, and the jaw is laid bare. The saliva is much increased in quantity and is mingled with blood and pus; the breath is most offensive. There is, as a rule, very little pain and but slight fever; there is marked apathy, and the vital functions are greatly depressed. The disease nearly always leads to a fatal termination, death being due to some form of septic poisoning such as broncho-pneumonia.

The *treatment* must be prompt and energetic. All the affected issue must be carefully dried and then thoroughly swabbed with fuming nitric acid. The patient's strength must be supported with fluid nourishment, tonics and stimulants.

"BUCCAL SYPHILIS," by R. B. Wild, M. D., M. Sc., read at the Manchester Odontological Society. Every dentist should be able to recognize a syphilitic patient; first of all for his own welfare, because syphilis is not unfrequently contracted by the secretions of a syphilitic patient getting into a little scratch or abrasion on the hand or fingers of an operator; secondly, for the welfare of his patients, since syphilis has been transferred from patient to patient by means of instruments used inside the mouth.

For example, syphilis has been conveyed from one patient to another by means of a stick of caustic; a Eustachian Catheter some years ago was shown to be the cause of thirteen cases of syphilis in the practice of a Parisian throat specialist; there are also, I believe, several cases in which dental instruments have been the source of infection. I believe, therefore, that it will be of interest to you to briefly review those appearances in the mouth which should, when recognized, make you particularly careful to thoroughly disinfect all instruments used in that case before using them on another patient, and also to take precautions to ensure your own safety.

With regard to the disease itself, we are all inclined to regard syphilis too exclusively as a venereal disease. In the majority of cases it undoubtedly is so, but about ten per cent. of all cases are contracted in a non-venereal manner. The primary lesion in these cases may occur on any part of the body, the important fact for our purpose tonight is that one-half of them (*i. e.* about 5 per cent. of all cases) occur in the mouth.

The parts of the mouth affected are the lips, tongue, tonsils, and soft palate, the two former more frequently than the latter.

Syphilis in the mouth takes on all the three forms which it presents on other parts of the body, viz., the so-called "primary," "secondary," and "tertiary" lesions. The primary form is the rarest, and the secondary the commonest. It is very rare indeed for any syphilitic patient not to present at some period of his disease secondary lesions in the mouth, no matter what part of the body was the seat of the primary infection. The tertiary lesions are intermediate in frequency.

Most of you know that syphilis is a disease which runs a very definite course; in the first period, or period of the primary sore, syphilis is a disease such as a carbuncle or any other disease of the skin or mucous membrane in which local infection has caused symptoms of local reaction on the part of the tissues. Sooner or later the local infective agent increases and multiplies, and passes into the blood, so that in this, the secondary stage, the disease is a constitutional one, similar to small pox or scarlet fever, and during this stage the blood and tissues of the patient are contagious, and capable of conveying the disease; the secretions of the patient are also infectious, especially the saliva, but it is un-

certain whether this is due to the saliva *per se*, or to the fact that it is ordinarily mixed with the discharge from the syphilitic lesions within the mouth.

The third period is one in which the patient has recovered from the constitutional disease, but the infective agent, whether it be a micro-organism or not, remains behind in certain tissues as an actual or potential cause of disease affecting that particular tissue; this tertiary period differs much in appearance and characteristics from the two preceding stages, but no hard and fast line can be drawn between them; one point, however, is important, viz., that it is either non-infectious, or at any rate much less infectious than the other two.

The primary sore or "chancre," is the first to consider, it occurs always as the direct result of local inoculation from another case. Infection occurs through kissing; the use of drinking vessels, spoons, pipes, etc., in common; and certain instruments used within the mouth. The first appearance, three to six weeks after inoculation, consists of a small, red, raised papule at the infected spot, there is not as a rule much pain, the papule extends and becomes intensely hard at its base and is then known as a "hard" or "Hunterian chancre," later on ulceration occurs at the surface and the neighbouring lymphatic glands become enlarged and hard. After some five or six weeks the chancre commences to heal, and apparently becomes quite well with the exception of some hardness remaining behind. From six to twelve weeks after inoculation or even later, the secondary symptoms appear; in the mouth slight sore throat, with a general congestion of the fauces and palate is often the first of these. The next stage is characterized by the appearance of "mucous plaques" or "condylomata," these are little raised patches on the mucous membrane, of irregular shape, not above 1-16 of an inch in height and well defined at their edges, they are white in colour owing to the thickened epithelium on the surface, the red colour of the mucous membrane being seen as it were, through a layer of opaque or ground glass; in many cases they closely resemble a patch of mucous membrane to which a stick of nitrate of silver has been applied.

These patches are especially common on the inner surface of the lips, especially about the corners of the mouth, on the inner surface of the cheeks, especially along the line opposite the sep-

aration of the upper and lower teeth; they also occur on the pillars of the fauces, the hard and soft plate, the uvula, and tongue. Sometimes the tongue shows, instead of a raised patch, a depressed, smooth, irregular area sensitive to the touch, in which the papillæ are smoothed down below the level of the surrounding healthy tissues. The next stage of secondary symptoms in the mouth is that of syphilitic ulceration. This often affects the same parts as are affected by the mucous plaques, the ulcerations are characteristic and generally of irregular shape, crescentic, "horse-shoe" shaped, or at any rate, bounded by curved lines; some of them are elongated curves which have been described as resembling "snail tracks." All the ulcerations in this stage are superficial, they extend in a serpiginous manner, there is not much discharge, and the base of the ulcer is often greyish in color. No part of the mouth is really free from them; but the pharynx, tonsils, palate, and sides and tip of the tongue are very common situations; they are often more or less symmetrical.

To sum up the chief lesions of buccal syphilis in the secondary stage, we have firstly the superficial congestion, secondly the raising up of the mucous membrane into mucous plaques, thirdly the breaking down of the diseased tissue so as to form ulcerations, and fourthly the presence of scars telling a history of past lesions.

One important point to be noted in all these forms of buccal syphilis, is the disparity between the extent of the local disease and the subjective symptoms of pain and dysphagia from which the patient suffers. It is not uncommon to hear a patient complain that he has a slight sore throat, but that it does not trouble him much, and to find on examination extensive ulcerations and other lesions, which, had they been due to any other form of disease, would have entailed great suffering.

The final stage of syphilitic mouth lesions is seen in the scars which not infrequently remain after the local ulcerations have healed; these are important as indications of past disease, they are often found near the angles of the mouth, and on the soft palate or fauces, where contraction of the scar tissue may produce deformity of the parts, such as dragging the uvula to one side, or even fixing the tip to the adjoining tissues.

The tertiary lesions of syphilis, on account of their much less infective character, are less important to the dentist than the primary and secondary. They consist chiefly in what are called "gummata," a very low type of inflammatory disease in which a large number of cells are produced at one point of the affected tissue; these accumulate and form a distinct tumour, the blood supply of the new-formed cells is cut off, partially by the pressure of the cells themselves, but also by co-existent disease of the blood vessels; as a consequence the cells die, undergo degeneration, and the gumma becomes soft, ulceration of the surface occurs, and the contents are discharged, leaving a deep ulcer which heals up by a considerable and permanent scar. Sometimes gummata penetrate deeply, erode the bones and cause perforation of the palate, or great deformity in the nose or other parts. The tongue is also affected and the gumma may be mistaken for cancer.

The Medical Record for May 30, 1896.

"THE VALUE OF FORCED ARTIFICIAL RESPIRATION (FELL METHOD) IN SAVING HUMAN LIFE IN CHLOROFORM, ETHER, AND NITROUS-OXIDE NARCOSIS, ETC.," by G. E. Fell, M. D., F. R. M. S., read before the Buffalo Academy of Medicine, Buffalo, N. Y., March 10, 1896. *First Cases.*—The first attempt I made to save life by forced artificial respiration was July 23, 1887, the subject a human being, and the operation resulted successfully. The laboratory apparatus used at that time merely demonstrated the value and safety of the principle which, previous to this and my following cases, had been universally condemned as not only unreliable but dangerous to use. The prevailing opinion at that time was that the air vesicles of the lungs would not resist forcible mechanical measures in artificial respiration. The medical world had accepted the views of the celebrated English physician, Marshall Hall, to "avoid the use of bellows or any forcing instrument" in his ready method in asphyxia. In this first case it was found that no lesion or interference with the pulmonary tissue had been produced, although the case came near being a failure through the laboratory apparatus used being unsuitable in its application to man. In my second case, a much more difficult one, I succeeded in saving my patient after breathing for him fourteen and

one-half hours, which I could have accomplished only through the new apparatus which I had specially devised for use upon human beings. Since then, December 10, 1887, some one hundred human lives, which would certainly have been sacrificed by the methods at the command of the profession at that time, have been saved through forced respiration. Most of these cases have been saved at my hands with few exceptions in the city of Buffalo, where I reside. It may be truthfully asserted that the manner in which I have utilized forced respiration is the only one in which it has been systematically demonstrated to be of value in saving human life.

Author's Method with Face Mask.—The introduction of the use of the face cup or mask has also overcome the prevalent idea that the epiglottis would fall and close the glottis in forced respiration. Many lives have been saved by it without necessitating the operation of tracheotomy, and its use has demonstrated that intubation is seldom needed, although its value must not be lost sight of in forced inspiration, as I intimated in my first writings upon the subject. My work has also demonstrated the uselessness of double-bellows and double-cylinder schemes, which had long been advanced and had failed as measures for artificial respiration. They will never be utilized in forced respiration when the same work can be more thoroughly and more easily applied and at less expense by the measures I have utilized.

Many believe forced respiration to be of value only in cases of opium narcosis, the field in which I first systematically utilized it.

This is far from the truth, as many cases have demonstrated, so that the broad assertion may be made without fear of contradiction that it will keep up the respiratory action in man better than any other method of artificial respiration now known.

Cases of Chloroform and Ether Narcosis in which the Patients were Saved.—We will first look into a few cases, heretofore unreported to a medical body, which affect the everyday experience of the medical and dental practitioner. Within some months I was called in council to attempt the reduction of a strangulated hernia. The anæsthetic was chloroform. Thorough anæsthesia was produced slowly and carefully, but the method by taxis failed to reduce the hernia. Deeper narcosis was produced and the pa-

tient stopped breathing. I applied forced respiration by the face mask for five minutes and auto-respiration ensued.

The anæsthetic was used again, the respiration ceased the second time, and again the apparatus was used with similar results. Operation revealed an omental hernia which could not have been reduced by taxis. However, under the chloroform, what a weight of anxiety was lifted from our minds by the satisfactory working of the forced respiratory apparatus! I did not use the Sylvester method, because I had no faith in it as compared with my own method and wanted to take no chances, the method of forced respiration being much easier in application and more effective.

Another everyday case occurred in this city, in which ether was used as the anæsthetic—a case of a young lady being prepared for a surgical operation. The respiration ceased, the Sylvester method failed to establish auto-respiration, the patient was taken to the Fitch Accident Hospital, where the apparatus was used for about half an hour, and the patient's life was saved. Thus, in cases of chloroform and ether narcosis we do not require to merely present an opinion upon the efficacy of this method of artificial respiration over all others, but give you facts which, connected with the results of this work in the past, are worth a multitude of dissertations founded, as generally is the case, upon experimentation on animals. Right here I might say that I have not made progress by such methods, and it is an interesting fact, which a remarkable array of circumstances has brought about, that all of my experimentation in the saving of human life by forced respiration has been made upon living human beings. My first attempt to save life by this means, as stated, and in which I succeeded, was made upon a human being.

Value in Nitrous-Oxide Narcosis.—But let us relate the value of the method with that other most frequently resorted to anæsthetic used in dental operations, nitrous oxide, and note the results. Here in this city of Buffalo we can present contrast cases of a most interesting nature, through which the value of forced respiration is made to stand out with great clearness. There is no subterfuge under which you can dim its value. To it alone must be given full credit for the saving of these human lives, and these cases cannot be obscured by the petty jealousies of professional life. The results of my labor in this line may be dimmed tem-

porarily, but will eventually shine all the brighter when its true magnitude comes clearly to the light of the fullest investigation.

Dr. Longnecker, of this city, a dental practitioner, had administered nitrous oxide thousands of times. About one year ago a young married lady was taking this anæsthetic at his hands in the presence of her husband. She ceased breathing. Sylvester's method of artificial respiration was resorted to, and a skilled surgeon, Dr. M. Hartwig, and his assistants worked faithfully to save the patient's life. Her heart kept on beating for fifty-five minutes, and yet death stepped in, when, as we will show, her life might have been saved had proper appliances been at hand. I am indebted to Dr. F. W. Low, of this city, for the facts here stated:

"Patient, Mrs. G—; nationality, Irish; age, twenty-six; occupation, trained nurse. Anæsthetized for extraction of right inferior *dens sapientiae*. The gas was exhibited to the amount of six or seven gallons. No unusual pallor was noticed during inhalation. When the pupillary reflexes denoted complete anæsthesia, the tooth was extracted. The patient sat quietly in the operating chair, apparently able to recommence respiration, and inasmuch as it is my habit to allow a moment to intervene after extraction before attempting to arouse one to consciousness, no alarm was felt at first. When I attempted to rouse her, however, it was found to be impossible. I then unhooked her corsets and cut all waistbands, and attempted to induce respiration by telescoping the short ribs and then suddenly letting go. Previously, during eighteen years' experience with nitrous oxide, this method had always resulted in the re-establishment of normal respiration. After several attempts of this character had proved unavailing, I sent for Dr. Chas. S. Butler, who practiced dentistry in the same building, and also sent for the Fitch ambulance, with the request that the hospital surgeon should bring with him 'the Fell forced-artificial-respiration apparatus.'

"Dr. Butler came immediately to my assistance, but before he arrived I had opened the mouth and drawn the tongue well forward to open the air passages, and had again attempted several times to start respiration by telescoping the short ribs. Upon his arrival the patient was placed on her back on the floor, a pillow first being placed under her shoulders, and artificial respiration

was attempted by the Sylvester method. Some slight amount of air must have been forced into the air passages, inasmuch as the patient did not become badly cyanosed, but still no voluntary respiratory effort could be induced, and Dr. Butler discovered that the radial pulse had become very indistinct. Applying his ear to the region of the heart, he reported its action as being both very feeble and irregular. I resorted immediately to a hypodermic injection of from fifteen to twenty minims of brandy in the arm. The heart's action was observed to be somewhat improved, but the patient appeared to become if anything more cyanosed, in spite of our efforts at artificial respiration.

"Upon arrival of the ambulance surgeon, probably fifteen or twenty minutes had elapsed since the case had become alarming. The Fell apparatus was immediately brought into use, and hypodermic injections of fifteen minims of digitalis and one-thirtieth grain of strychnine were administered.

"I was not present when it was finally discovered that the patient could breathe for herself, but I judge that it must have been nearly or quite thirty minutes after the arrival of the ambulance surgeon.

"The patient was now removed to the hospital, where I visited her an hour later and found her convalescent. She was able to be about her duties in the afternoon of the same day, though feeling very much 'out of joint,' as she afterward told me, probably the result of my heroic effort before the arrival of the ambulance surgeon.

"I have recently learned that the patient reported in the above case had, during the early morning hours of the day of operation, resorted to hypodermic injections of morphine at different times, in all amounting to three-fourths of a grain. This was for the purpose of allaying the intense pain which she was suffering, not only in the offending tooth, but still more so in the regions of that side of her head."

"F. W. Low."

Will anyone, I ask, question whether Dr. Longnecker's patient could have been saved in the face of Dr. Low's recital of his most important and interesting case? In the latter the previous administering of the morphine added difficulty to the work of the apparatus, but renders the result more important. Have we not now the right to ask who will be the next to let their patients die

when they may be kept alive by the exercise of a little right-minded forethought? Thousands of physicians and dentists are, as placed to-day, ignorantly ready to take their chances in dealing with the lives of patients entrusted to them. It would seem from these cases and others similar in nature which might be reported, that forced respiration might prove almost a specific in such cases.

The Case of Dr. Henry J. Williams.—The patient in this case had been a student in the medical department of Niagara University, Buffalo, N. Y. He had passed the general examination of the faculty of the school and taken the regent's examination to enable him to practice medicine in the State. During the entire course of his studies he had been employed as night out-door collector in the work of the Buffalo Postoffice Department. He was overtaxing his mind and body to a marked degree. During the last few months of his medical course he had resorted to tincture of nux vomica, twenty minims, three times daily. Owing to the inconvenience of carrying the liquid, he had resorted to strychnine, one-fortieth grain, three times daily per stomach. On the night of July 2, 1894, he had been without sleep and needed rest for five days and nights; in fact, he was a thoroughly exhausted man.

About 1:30 A. M., July 3, 1894, under these conditions, he administered to himself hypodermically two one-fortieth-grain tablets of strychnine. He did not obtain the bracing-up effect desired so soon as he expected and in a short time repeated the dose. He then took another one-fortieth, when the drug manifested its toxic effects in twitching of the muscles and tendency to opisthotonos. At this he became frightened and gave himself a hypodermic injection of one-fourth grain tablet of morphine and atropine as an antidote, and repeated the dose twice at short intervals, as the convulsions had continued to increase. He stated that he did not believe his life to be in danger at any time—did not think it necessary to call a physician. The truth is that he was dazed and stupid, and was fast losing control of his faculties. He subsequently stated that he had the dreamy recollection of repeatedly administering the morphine hypodermically until he became unconscious. There is thus no certain evidence of the amount of morphine and atropine administered. It was about 2

A. M. when the last drug was administered, and about 7 o'clock next morning when his father discovered him on the floor of the bathroom, unconscious and cyanosed.

Dr. Archie Drake near by was summoned. He was followed by Drs. Wesley C. Earl and Thomas Bagley. The latter on consultation administered hypodermically a dose of strychnine. Dr. Sydney A. Dunham next came upon the scene. He wisely proceeded to perform Sylvester's method of artificial respiration, which was beneficial in a degree, as it held the life of the patient until my arrival at 8:30 A. M.

First day, Tuesday, July, 3, 1894. Condition of patient on my arrival: Unconscious, reflexes absent, cyanotic, pulse at wrist weak, with difficulty to be detected. An occasional gasping respiratory effort was made. With a hasty glance at these different features, I immediately applied forced respiration with the face mask. Whether it did any good or not, I felt that the case was so desperate as to warrant the operation of tracheotomy, which was immediately done. Hemorrhage persisted, so that it was 9 A. M. before the forced respiration was systematically under way. In a short time the pulse improved at the wrist, but the cyanosis passed slowly away. At 11 A. M., after two hours of forced respiration, the patient opened his eyes and in a startled manner asked, "What is the matter?" and immediately relapsed into unconsciousness. The desperate condition of the case being evidenced by the unusually slow response to the efforts being made, it was thought best to administer oxygen gas with the forced respiration. A supply was obtained and connected with the oxygen tube of the apparatus. It was used throughout the case, but it was found that the oxygen alone was not sufficient to retain the life of the patient.

During the whole of Tuesday afternoon and night, July 3, 1894, the first day and night, the apparatus was in continual operation.

Second day, Wednesday, July 4th, Independence day. I had arranged to visit my family and take part in the festivities away from the city, and at 11 A. M., with this object in view, I removed the tracheotomy tube from the neck, expecting that the auto-respirations would ensue and that with the aid of the oxygen gas continuously administered the patient would be enabled to exist

without the aid of the respiration apparatus. Then, again, Dr. Williams had now been kept alive by these special artificial means for a longer period of time than had ever occurred previously in the history of forced respiration. We had been continuously at work with him for twenty-six hours. I left the patient in the hands of Dr. Earl Lothrop and Dr. R. R. Taylor, and nurse Mrs. Edmunds, and left for my office to take the boat for Crystal Beach. On arrival at my office I was summoned back with the unpleasant news that the oxygen supply had given out. I gave instructions to have the supply renewed, and hurried back to the patient. He was breathing with considerable exertion, but was somewhat relieved by the renewal of the oxygen supply, so that I made another attempt to get away. I had not reached my city office and residence before a telephone message was sent again, urging my immediate recall, with the admonition that the patient was breathing with great difficulty and had become cyanotic. On again reaching the patient I found that in addition he had relapsed considerably. I then gave up all hopes of having a vacation, and replaced the tracheotomy tube in the neck.

2 P. M., July 4th. I again renewed the forced respiration with varying proportions of oxygen gas, and kept it under way continuously till 9 A. M., July 5th, or the second long-continued period of forced respiration, viz., twenty-one hours.

Interesting Influence of Forced Respiration in Reducing Temperature. At the beginning of this second long-continued respiratory effort the temperature in the mouth registered 104.5° F. At the close it was 101° F., or a reduction of three and one-half degrees. Nothing in the line of antipyretic medication had been utilized, and the decrease in temperature had not taken place under the administration of the oxygen gas. Or, in other words, all agents utilized were of no avail without the mechanical respiration; it alone was the necessary factor in the life of the patient; and, owing to the perfectness of the method and its similarity in influence to physiological respiration, its tendency was toward the toning up of the system and the overcoming of the abnormal condition existing. This speaks volumes for the perfect working of the simple apparatus and for the complete and instantaneous control the physician has over the character of the inspiration, he having it in his power to shorten or lengthen an inspiration or

expiration, to change instantly from one to another, and thus to aid the autorespiratory effort when attempted on the part of the patient. This is effected by the arrangement of the air-control valve, which is simple and yet does its work entirely at the option of the manipulator. Other methods recommended will not accomplish this so readily.

Third day. On the third day of the case, Thursday, July 5th, the question as to the probability of the patient ever being able to breathe for himself was becoming, indeed, a serious matter. It was with a view of giving him an opportunity to do so that the interval between 9 A. M. Thursday and 7:30 P. M. was devoted to auto-respiration. As the afternoon wore away, it became evident that a serious mistake had been made in not early renewing the forced respiration or in discontinuing it at all. The patient relapsed into unconsciousness where before a semi-conscious condition prevailed; the respiration became shallow, cyanosis set in, and the case appeared more hopeless than at any time previously, so that many of the doctors present ridiculed the idea of saving the patient. The pulse became weak, thread-like, and frequent, so that continued hypodermic treatment with brandy and caffeine and rectal alimentation became necessary to sustain the fagged-out system.

7:30 P. M., Thursday, July 5th. Forced respiration was again resorted to, as it had been conclusively proven in this, as in many other cases, to be the only agent which could with certainty be regarded as a life sustainer. I made up my mind to keep it under way until the end came, "be it what it might."

The result was marvellous, although improvement came slowly. The temperature, without other treatment than the forced respiration and oxygen with sustaining measurers, came down from 104.25° to 100.8° F., the cyanosis passed away, and the pulse improved in force and lessened in rapidity just so long as we kept our breathing-apparatus under way.

Fourth day. Toward the middle of the afternoon of Friday, the fourth day and third night since my method was used, we again gave the patient an opportunity to attempt his own breathing. The apparatus was used for five minutes and then the patient was allowed two or three minutes at auto-respiration. This was kept up for a short period, as it was evident even at this late time

that the respiratory centres were not in sufficiently vigorous condition to control and keep up auto-respiration. It was very fatiguing for the patient to make these efforts, and he would hail with satisfaction the relief afforded by the forced respiration; being perfectly conscious he could not with all his energy keep up auto-respirations.

After a time the working of the apparatus became unpleasant to the patient; the rushing of the air into the trachea appeared to bother him. The fact, however, began to dawn upon us that he was getting into condition to breathe for himself, and at ten o'clock on the evening of Friday, July 6th, we gladly relinquished to Dr. Williams his undoubted right to do his own respiratory work.

The third and last continued period of forced respiration in this case began Thursday at 7:30 P. M. and terminated finally at 10 P. M. Friday, or twenty-six and one-half hours. The total time during which the apparatus was in constant use was nearly eighty hours.

The tracheotomy tube was removed from the neck, the wound closed antiseptically, and the patient made as comfortable as possible. For some time during the use of the apparatus nutrient enemata were used, the urine was drawn by catheterization, and food and medicine were administered by the mouth.

The longest time during which the method was used prior to this case was at the Continental Hotel, Buffalo, in my practice. The respirations were kept up continuously twenty-one and one-half hours and in all twenty-four, before the patient could breathe for himself. He is now living in Pittsburg, Pa. Numerous cases have taken place in which the respirations have been under way for from eight to fourteen hours with favorable results, and in which the face mask was used instead of tracheotomy. Nothing like Dr. Williams' case had ever been reasonably contemplated as a possibility. That a human being, by the administering of poison accidentally or with a mistaken knowledge of its effects, could place himself in such condition that the respiratory centres could be inhibited for days in the performance of their functions, and that it might be possible to respire by mechanical methods in such a condition for days at a time, would appear preposterous.

All this has been accomplished in the case I have presented, and it may be cited as one in which verily "fact is stranger than fiction."

Further Application of the Method.—The inhibition of the respiratory centres in the case of Dr. Low's patient, in which it was of a comparatively temporary nature, and in that of Dr. Williams, in which for days their function was paralyzed, make the remarks of Dr. Horsley, of England, reported in the *Quarterly Medical Journal*, of special interest in connection with forced respiration. He calls attention to the fact that in cases of cerebral compression, such as arise, for instance, from cerebral hemorrhage, tumor, or depressed fracture, as well as from sudden and violent concussion, especially when applied to the region, death is due to failure of respiration.

From experiments on animals he determined that a use of pressure in the skull always causes slowing and diminution of the respiratory movement, and later arrest of the same; and, furthermore, after release and re-establishment of the pressure has been carried out once or twice, the respiration becomes periodic, exhibiting the characteristics of Cheyne-Stokes breathing, or simply becomes irregular in force or in rhythm. Both these effects may be due to direct pressure and secondary anæmia caused thereby.

The practical application is that under such conditions in many instances it is as important to perform forced respiration as if the case were that of a drowning man. Horsley sums up his communication with the statements that the respiratory centre is more sensitive to mechanical pressure and shocks than any of the lower vital nerve centres; that where death threatens from intracranial pressure artificial respiration should be performed and the skull opened freely; and that in cases of sudden shock artificial respiration should be instituted immediately and heat applied to the head frequently by migration. In fact, I believe that in many cases of brain surgery altogether too little attention is given to support by artificial respiration, and now that forced respiration can be carried out in these cases another important field in which to use it is opened up, in addition to many reported in my former papers. Had I the hospital service presenting the opportunities, I should long ago have demonstrated the practicability of these opinions.

The Ohio Dental Journal for May, 1896.

"A METHOD OF STRENGTHENING PARTIAL LOWER PLATES," by W. H. Brown, Nashville, Tenn. We all know what a difficult matter it is to make a strong partial lower plate in certain cases where it extends around in front. I have for three or four years been using a small platinum wire, or, if the price we sometimes get is not sufficient to justify, a German silver wire will do, as it is covered with rubber.

Prepare the plate as follows: Wax up and invest in the usual way, remove the wax, then before packing take a wire sufficiently strong to suit the case, being governed by length of space, bend with a pair of round nose pliers to fit close up to the model all the way around, letting each end extend about a half inch past the first tooth to be inserted. After you have fitted the wire accurately warm your flask and proceed to clip your rubber into small pieces, pour a little chloroform into any small vessel, place the wire in position and proceed to pack the plate in the usual way, using the chloroform to dampen the rubber so as to make it stick to the model and in that way there is no danger in dislodging the wire. If care is taken in fitting the wire it will not show through when the plate is finished and you will have a strong light plate.

"A REPORT OF TWO CASES OF NEURALGIA OF THE SECOND BRANCH OF THE FIFTH NERVE; EXCISION; RELIEF," by W. H. Hamilton, M. D., Columbus, O., read at Ohio State Dental Society, Dec., 1895. Tic doloreaux is a very painful affection. It most frequently involves the second branch of the trifacial. As the disease may affect all the branches, and especially the two lower, it is a condition the discussion of which may be pertinent to dentists.

The etiology and pathology are vague. There is no doubt as to the severity of the sufferings which it may entail. The fact that it is frequently found in subjects whose constitutional condition is very low is suggestive. May it not in a proportion of cases be a species of neuritis in physical bankrupts; in other words a vice of impaired nutrition. If a patient should lose flesh and strength, and should become anæmic, so that there is from any cause decided impairment of the general health, that fact makes him the target of intercurrent diseases.

In perfect health the peripheral nervous system, if such it may be termed, should do its work unconsciously, so far as its possessor is concerned. In disease, perversions of sensation or actual pain may be observed along portions of this system. Affections of the brain or cord, or the meninges; distal irritants, ulcers about the tongue or floor of the mouth, disease of the teeth, or alveoli, or gums, may give rise to pain, which, if radiated along a branch of the fifth, may cause trigeminal neuralgia. Probably profound anæmia or malarial saturation, or both conditions together, are common accompaniments of it. While, on the other hand, the tendency of the pain to wreck the patient's health is a most rational result. Suicide has in some instances been attributed to it. It is a significant fact that while many of these sufferers have had their teeth extracted before visiting the surgeon, relief is rarely thus obtained. External applications of drugs and electricity have been employed with some benefit. Morphia hypodermically has been a natural therapeutic reliance. It is in no sense curative. It aggravates the pain, for it creates the necessity for its repetition. The regular use of an opiate for a fortnight for pain will often show its grip on the patient by the apparent production of intense pain, at the time at which the drug should have been repeated, according to the interval at which it has been given. In other words, the discontinuance of an opiate may often produce pain, if the expression be allowable.

"Considerable success has recently attended the practice of injecting a one per cent. solution of osmic acid into the tissues, close to the affected nerve. The injection itself causes a good deal of local pain, puffing and swelling, and has to be repeated several times before any permanent subsidence of pain is produced. This is probably due to the fact that the osmic acid, which has a powerful affinity for certain elements of nerves, as is known by the staining which it causes, sets up degeneration of the nerve fibers with atrophy. The length of time which it takes to act in the treatment of neuralgia supports this view and shows that the cessation of pain is not a 'cure' in the true sense of the word."—*Treves*.

A small proportion of patients suffering from recurrent tic get relief from the use of gelsemium or arsenic, or a change of cli-

mate. An old man whom the writer saw in consultation some months ago with the late Dr. Flowers, of this city, had suffered much from neuralgia of the second branch. He had athermatous vessels, had become quite ex-sanguine, and was much debilitated. By liberal feeding and the use of arsenic, with change of climate, relief was obtained. No doubt too the impairment of tone of the vascular tunics may have had its influence in inviting the disease and in retarding his convalescence. Of the radical procedures that surgeons have from time to time advocated for the correction of tic, either general or affecting other branches, I shall only say that while they are very interesting, time prevents us from entering upon the discussion of them. Recurrence after the various operations is very common. The interval varies from a few weeks to three years. The most formidable thing done has been the removal of the Gasserian ganglion, which lies near the apex of the petrous portion of the temporal bone. The names of Mr. Rose, of King's College hospital, Andrews, of Chicago, Hartley, of New York, Keene, of Philadelphia, and Horsley, the brilliant surgeon, pathologist and neurologist of the University College Hospital of London, deserve conspicuous mention in connection with these radical performances. Carnochan, of New York, who devised the procedure, trephined the antrum to facilitate neurectomy, and his operation was resorted to in the cases which are herein submitted.

Case 1.—Mr. B. S., a German from Vinton City, aged 64, laborer by occupation, entered the Mt. Carmel Hospital, Oct. 1, 1893. He had had agonizing pain much of the time of late. It was paroxysmal and was not associated with convulsive movements of the facial muscles. A slight draught, the act of smiling or gentlest efforts to masticate, give rise to pain. It had increased so much during the previous few months as to impair his nutrition and strength. Furthermore, he was incapacitated from all forms of labor. The pain affected the right side of face from the upper lip to the eye, and outward to the angle of the jaw. The cheek and in fact all parts of the face supplied by the second branch were tender, and handling of the parts provoked an attack. All medication had failed to relieve him. Operation Oct. 19th, 1893. An anatomical landmark of interest to us is the fact that a straight line from the junction of the inner third with middle third of orbital edge of the

frontal bone to the interval between the two bicuspid of both jaws, will, if produced, locate the openings of exit of the three branches of the 5th; supra-orbital, infra-orbital, mental. A T-shaped incision below the orbital edge of the upper jaw was made and the nerve isolated, and a trephine was applied to the antrum. The nerve having been hooked up was followed through its canal by chiseling away portions of the bone wall. More than an inch of the nerve was excised. The wound healed in a few days. He was discharged from the hospital on Oct. 31st, 1893, eleven days later. He has had no signs of recurrence of the pain and is in excellent health.

Case 2.—The patient who is presented to you to-day is 67 years of age. For four years she had been afflicted with this disease. The usual therapeutic measures had been used and had failed to relieve her. She was anæmic and feeble. Her health had been broken. She was operated upon at the hospital last July. A small trephine was applied to the antrum as in the preceding case. The bony walls of the upper jaw were very thin and frail. The soft parts were lifted up from the floor of the orbit. By means of the chisel all the intervening bone was removed from the opening thus made through the lower rim of the orbit. This vertical extension was narrower than the trephine aperture. Following the nerve, the bone was perforated with a director throughout the course of the groove intended for the reception of that trunk. About an inch and a half of the nerve was excised. The extensive removal of bone destroyed in part the abiding place of the nerve. It offered a more radical destruction of it, in its continuity.

Comparison of the two cases has proved that the scar is less noticeable in this than in the first one. Although it is too early to demonstrate its permanent utility, it is gratifying to learn that there has been entire immunity from the former torture. She has gained twenty pounds in weight since the operation.

"PRACTICAL POINTS," by Dr. T. B. Wallace, Garner, Iowa, read at Northern Iowa Dental Society. Take the superior bicuspid tooth which is left quite badly decayed. We all know that but little dentine is left, less I think in proportion to the tooth and cavity than in any other tooth. We prepare the cavity, make

careful preparations for retention of the filling, fill it carefully; patient goes away, and in the course of time he returns with the inner wall broken off. What is the trouble? We have not done the work right; the inner cusp, which was sharp, occluded too strongly with the lower tooth; causing it to give way. The filling is loosened and comes out. The crown is in bad shape and the only recourse left is to crown or cap in order to save it. In my experience that tooth has given me more trouble than all the rest of the teeth. My treatment now is to cut down the inner cusp until it is free from occlusion or to a point of protection from force. I apply this method of treatment to others, especially to the molars. We are too afraid of cutting away too much tooth substance, but better that than to lose a filling from the wall breaking away. It is hard to tell just where to stop or what cases should be treated in said manner, as we will have to leave that point to your own judgment. Another mistake is trusting too much to pits and grooves for gold fillings. Pits and grooves alone will not hold a filling in a cavity. It must have a retentive shape in some manner. If necessary to make one, it should be made upon the strongest wall. Not only myself but some others, whose work has come under my care, have had failures by depending too much upon pits and grooves to hold the filling in place. I now use merely a pit or groove to start a filling, and rely upon the retentive shape of the cavity to hold it. Some operators are more expert than others with gold and may not require so much care in preparing cavities, but we cannot be too careful in preparing any cavities for filling. It is success and not failure we are laboring for.

Root-filling is another point. Some do not succeed very well along this line. Since I adopted the following treatment I have not had one failure so far and I have used it for a year or more. It is the use of hot air applied to the canal after a thorough treatment with peroxid of hydrogen and Black's 1, 2, 3 mixture. Then I dry canal with broaches wrapped in cotton, then force carbolic acid solution to apex of root. Taking my chip blower and lamp, I exhaust air in bulb, hold point in blaze of lamp, filling bulb with hot air, then apply to and force into canal until tooth becomes heated, then proceed to fill canal. I use chloroform with gutta-percha points. I have, I think, as perfect a disinfected condition

of tissue and canal as it is possible to get. I have tried several ways, but this manner suits me the best so far.

The Dental Cosmos for May, 1896.

"MOLECULAR ATTRACTION IN ROOT-FILLING," by H. W. Allwine, D. D. S., Omaha, Neb., read before the Omaha Odontological Society. At a former meeting of our society you requested me to present experiments and prepare a paper on the above subject. I take pleasure, therefore, in reading this paper and presenting for your examination some of the results of my work.

That I might clearly note the action, in small tubes, of various materials used in filling roots, I drew out small glass tubes, conically shaped, varying in size and form, as do root-canals. I call them tubes, but you will notice that they are cone-shaped, as are root-canals. Some are large, while others are so small that the smallest broach cannot be passed into them. In using roots of teeth for experimental work, the progress and result of the work cannot be seen. Some of the material may appear at the apex, while at the same time some of the root may remain unfilled.

Before discussing the various root-filling materials, I wish to prove to you, by ocular demonstration, that capillary attraction, a form of molecular attraction, does not come to our aid in root-filling. We find capillary attraction exists only when the tubes are open at both ends. Root-canals are practically sealed at one end. I have here a number of variously formed tubes. Some are open at both ends, while others are sealed at one end. I now place the open ends of the various tubes into this colored water. Notice how rapidly it rises through the entire length of the tubes open at both ends, while it does not enter at all the tubes sealed at the outer end. This is an important observation, because it is at variance with the teaching of some of our prominent writers. One even, in his enthusiasm for salol, goes so far as to tell us, in his journal, that he squirts it into root canals, indiscriminately, with a syringe. I am not here to state that others cannot do thus and so because I fail therein, but I do say that it is contrary to nature's laws,—science,—and I cannot do it. Large tubes, sealed at one end, into the entire length of which the needle can be passed, may be filled nicely by a syringe, with liquid, by passing the needle into the entire length of the tube, pressing on the piston, and gradually withdrawing the needle.

Before reading further, I will demonstrate these truths of science with the tubes and syringe here at hand. You will note how readily the liquid passes into the tubes open at both ends. Notice, too, how easily I fill the tube sealed at one end by passing the needle into the entire length of the tube, pressing on the piston, and gradually withdrawing the needle. Now you will observe I pass the needle part way up this sealed tube, press on the piston, and the liquid is forced backward, leaving a column of air in the tube beyond the needle-point. Why is this? It is a law of liquids that, if left alone, they assume a spherical form. When the first drop of liquid comes to the point of the needle it becomes spherical, touches the walls of the tube, sealing in the column of air beyond. This is likewise true in root filling.

It will be seen readily, therefore, that these sealed tubes can be filled only by working the filling material in with an instrument. Here molecular attraction, or adhesion, comes to our rescue. By using a material between which and the side of the tube there is adhesion we succeed. By drawing the broach backward and forward, we carry some material in each time that adheres to the walls and that which is already in. Thus we gradually extract the air and fill the tube. With me it is impossible to do this with material having no adhesion for the tube or with liquids. They are carried back and forward with the broach. You have all noticed these facts in the use of various materials in your daily work. By the use of these glass tubes I can note every movement of the various materials within the canals.

The reading of a paper on salol, and the discussion thereof, at a former meeting, suggested this paper and these experiments. Though I used salol sparingly, yet I was its friend and advocate. This was not because I *knew* of its positive merits, as were claimed for it, but because a number of good men were so loud in its praise. I am completely disappointed,—forced to be so. In large tubes it can be used nicely, but so can every other material that I used. It is the most difficult, according to my observation, to insert into canals of various forms and sizes, as we find them. Being in liquid form, the particles move freely backward and forward with the broach. The air is not extracted, but is mixed, as it were, with the salol, leaving the solid salol in sections. There is so much uncertainty of its action in the tubes, at my hands,

that I would be afraid of it as a permanent root-filling. I would find hope only in its antiseptic property.

A prominent writer and authority on dental subjects places a gutta-percha point on a root-canal plugger, softens it in chloroform, floods the canal with chloroform, then presses the point into the canal. This method is good for filling large tubes, leaving chloroform out of the tubes, however. In small tubes it does not work at all, unless the point be thoroughly softened, then it is simply a case of chloro-percha filling.

In my experiments an excess of chloroform in the tubes thins the filling-material too much, and, after evaporation of the chloroform, does not leave the tube filled. By softening the small end of a gutta-percha point in chloroform, I can press it to the end of tubes nicely. The tube may then be filled with any material. In this way I get positive results.

As we must depend upon the sense of touch on the part of the patient, as to when the canal is full, the conclusion reached in my work on the glass tubes would make it imperative that the canal be not flooded with any medicament, as it is forced ahead of the filling-material proper. This is felt by the patient and we force no more material into the canal. When the liquid is absorbed, the root is unfilled. I believe many roots are thus filled, and the operator congratulates himself on his grand success (?).

With oxychlorid my work was not a success in tubes too small for my broach. It hardened so that I could not force it ahead, to get positive results.

With chloro-percha my experiments were more satisfactory. Results with this material were more positive when the chloro-percha was of the proper consistence. When used thin, even though the canals were quite full, the filling was very defective after the chloroform had evaporated. The gutta-percha was then separated into sections, and even they were not solid. It can be forced into the smallest tubes when quite thick,—almost stiff.

When filling sealed tubes the elasticity of the air and gutta-percha was quite apparent, in that the filling material tended to come out of the tube perceptibly, leaving a small space unfilled. I am inclined to think this same tendency exists in the filling of root-canals. It may be retained, as desired, by cement in the pulp-chamber. The above are all the filling-materials with which I have experimented thus far.

It is needless to say that I find canals in which I am unable to do work satisfactory to myself. We all find them. For the treatment of these we look forward to the mummifier, hoping one may be discovered whose good effects will be permanent.

"THE PRESERVATION OF THE DECIDUOUS TEETH BY MEANS OF CAPS AND CROWNS," by L. Ottofy, D.D. S., Chicago, read at New Jersey State Dental Society, Aug. 1, 1895. The preservation of the deciduous teeth is a subject which presents many difficulties, and for some years past it has been the aim of some of the most conscientious members of the profession to overcome some of these difficulties and to lessen the necessity for the premature removal of these teeth. It is generally conceded that no material improvement in the general structure of the teeth in the human race can take place so long as extraction is one of the most frequent operations resorted to in the treatment of either the temporary or the permanent teeth. There is little question regarding the fact that the present generally bad condition of the teeth is due in a great measure to the neglected condition of the teeth in past generations. From a dento-physical standpoint, the people of to-day are badly demoralized. It seems hardly necessary to refer at length, before this society, to the importance of saving the deciduous teeth until the exact time when by the operation of nature they should be shed. We generally lose sight of the moral influences that are exerted, when the practice of saving the teeth is commenced early in youth. The impressions of early life are apt to be the controlling influences of the adult, and it seems to me that a habit to save could be more easily inculcated than a habit to have teeth extracted. But the principal thing is the opportunity offered to educate the youthful patient, to form early the habit of care and watchfulness over organs whose importance is at this age generally underrated. The profession of to-day can leave no greater heritage to those of the next generation than the one which has for its aim the education of the children in every sense.

We cannot begin too early in life, and if half the attention were given by the dentist to each case of the child that is given under similar circumstances to an adult, much could be accomplished. As it is, children are often turned away with the com-

ment, "It's only a child." Every one realizes that it is much more difficult to treat children successfully than it is to treat the grown; that the operation performed under these difficulties is not always as successful, and hence the difficulties are too frequently met by the forceps. It is the dental profession, and not the laity, who are responsible for the generally accepted idea that children's teeth cannot be filled, or that they should not be filled, and I think it is time that the profession remedy the error of which it is the sponsor.

The same treatment which will save permanent teeth will not always save the deciduous teeth; the conditions are so different that if the operator has not the time or the ability, he will meet it by extraction. It should be placed, however, to the credit of the profession that some of its members early realized the baneful effects of this kind of practice, and that during the past fifty years many crude and unsatisfactory methods of saving these organs have been more or less practiced by them. In this way the practice to destroy the pulp and leave the tooth first originated; this way improved upon by capping the pulp with some devitalizing agent, then filling the cavity and drilling a vent-hole for the escape of gases which might originate. Crude as these practices were, they began to prove that the importance of saving these teeth had been recognized. The practice of bridging across with plastic fillings from one cavity into another in the case of approximal cavities was resorted to, when the difficulty of retaining fillings in these small teeth was recognized. In short, there is no one here who considers the handling of these cases a pleasant part of their practice.

As a result of the necessity for frequent refillings, each time causing a little more pain and cutting away a little more of the tooth, and for the purpose of overcoming the many unsanitary and unwholesome practices resorted to, I have conceived the idea of saving the deciduous teeth by means of crowns and jackets,—a practice which from its simplicity, ease, and permanence is strange not to have been long since recommended. It is about a year ago that I first performed the operation, and I have since then continued it with perfect satisfaction.

In the case of incisors and cuspids of children it is difficult, as a rule, to introduce a satisfactory filling, especially at so early an

age as two or two and a half years. In the first place, the preparation of cavities is painful, the teeth if carious so early in life are exquisitely sensitive, and the most sympathetically disposed operator's patience is sorely tried in doing something satisfactory; hence in the majority of cases the result is a cement filling, often hastily and improperly mixed, hurriedly introduced, and perhaps permeated with moisture before protection against it could be applied. The result is a repetition of the operation at short intervals, sorely trying the abilities of endurance of the restless, wriggling piece of humanity, to say nothing of the increased sensibility occasioned by the repeated cutting away of what little tooth-structure there is.

How much simpler it is to remove only the greater portion of decay, slightly separate the tooth from its neighbors by means of a sand-paper, corundum, or diamond disk, and attach one of these jackets, without taking an impression or carefully fitting it, and cementing it into place. The specimens exhibited will prove how simply and crudely these crowns may be made.

For this purpose I use twenty-four or twenty-two carat gold plate, 34 gauge, or platinum 38 gauge. The pattern is cut out as indicated by the specimen exhibited; it is bent with pliers, pressed with the fingers around the neck of the tooth, and the edges caught with a mite of solder and cemented into place. Fortunately the deciduous teeth are generally more regular, not so closely in contact, less variable in size in different individuals, than the permanent, and are usually of a shape readily adapted for the fitting of these crowns. The articulation quickly accommodates itself to the crown by either the slight displacement of the crowned tooth or of its antagonist. So much of the work is done outside of the mouth, and when done at the chair or within view of the little patient it is a source of amusement and interest instead of dread and pain. I have some of these caps sticking in place, although the restlessness of the little patients required haste in fitting and attachment.

I have never taken kindly to the method of filling deciduous teeth by bridging the filling-material across the interdental space, although I have been forced to practice it for want of any better means of retaining the fillings in place. In the case of the molars, therefore, this practice offers many advantages. Usually it is

better to take an impression in wax, modelling compound, or Melotte's clay, than with the Melotte outfit. Dies and counter-dies are quickly made and a cap struck up. Frequently there is no necessity of shaping the crown, as usually it is unnecessary to extend the cap down on the crown, except for a short distance. It is sufficient if it extends far enough so as to hold it in place. Its purpose is merely to serve as a protection to the underlying cement. It is remarkable with what tenacity these caps will adhere, even in cases where it has been impossible to prevent the moisture from coming in contact with the cement before it has set. For these jackets or half-crowns I find pure gold most satisfactory.

The International Dental Journal for May, 1896.

"NOTES ON FORMIC ALDEHYDE," by J. Morgan Howe, M. D., M. D. S., New York, read before the New York Institute of Stomatology, March 3, 1896. Having been appointed by the president of this Institute a member of the Committee on Materia Medica and Therapeutics, these notes on this comparatively new therapeutic and prophylactic agent will be presented as a partial report from that committee, with the understanding that the other members will make additions to it during the discussion of the subject.

As this substance has already been shown to have very valuable properties for our service, it is well worthy of our study. The results of my own use of it during the past year have been so favorable that I have looked somewhat into its chemical characteristics and its literature. These have increased my interest in it, and have helped establish the conviction that it is destined to be of great service to us in several ways.

Formic aldehyde, or formaldehyde, is a gas, prepared by subjecting methyl alcohol (or wood alcohol) to oxidation. The chemical formula of methyl alcohol is CH_4O , of formaldehyde is CH_2O , and of formic acid is CH_2O_2 . It is a product midway in the process of oxidation between the alcohol and the acid. The first step in the oxygenizing process is effected by the loss of two atoms of hydrogen, and this change is expressed in the word aldehyde, contracted from *alcohol dehydrogenatum*. The next step in the oxygenizing process, which forms the acid, is effected by the addition of an atom of oxygen, as is seen by the formula.

As this gas is readily absorbed by water it is furnished to us in a forty-per-cent. solution, and in this condition is known also as a formalin and as formol. As formalin is quite commonly used as a designation, and is, perhaps, a trifle more convenient, it is not objectionable, excepting its tendency to cause the chemical constitution of the compound to be lost sight of; for aldehydes, being as regular chemical compounds as alcohols or acids, are entitled, as such, to have their regular designations remembered. For this reason I have chosen to use the chemical name at the head of these notes.

Formaldehyde in solution, as we obtain it commercially, is comparable in a way to the solution of ammonia, with which we are all so familiar,—a gas absorbed by water, and capable of being diluted with water to any extent, so that any desired percentage may be obtained in that way.

Although its antibacterial action was noticed by Low in 1886, it has only begun to attract much attention during the last two or three years. Berlioz and Trillat have demonstrated that anthrax bacilli were killed by a dilution of 1 to 50,000, and Drs. Slater and Rideal have shown that the growth of different specific microorganisms was inhibited by its addition to the media in the proportions of 1 to 5000 up to 1 to 20,000; and soiled cloths from the post-mortem room were rendered sterile by soaking in a one-per-cent. solution.

A one-half-per-cent. solution has been used in surgical operations for irrigating wounds and washing the hands and instruments of the operators, with better results than when other antiseptics were used for those purposes, and it has been used in a similar way in ophthalmic practice. Dr. J. M. Davidson, of England, has recently reported very favorable results from the use of solutions of 1 to 2000 and 1 to 3000 in abrasions of the cornea, and in hypopyon ulcers. It prevents suppuration and relieves pain, producing no irritation in the strength recommended, according to his experience. Whooping-cough has been successfully treated by spraying a one-per-cent. solution over the heads of the patients; and experiments are being made similarly in the treatment of pulmonary consumption.

In bacteriology formaldehyde has been found of great service in the arrest of fixation of development at any desired stage;

and for preserving and hardening anatomical and microscopical specimens it has served the purpose better than either alcohol or Muller's fluid.

This agent has been proved to have such extraordinary disinfecting power, together with non-toxic qualities, that one-half-per-cent. solutions are recommended as fully adequate for the general disinfection of sick-rooms, infected clothing, books, and furniture, by means of spraying apparatus; and for the disinfection and deodorization of vessels, closets, waste-pipes, etc., and their contents, by simply pouring over them. A one-per-cent. solution has been found amply sufficient for almost all disinfecting requirements, and from one-fourth- to three-fourths-per-cent. solutions are strong enough for most purposes. In these latter dilutions Professor Cohn has found it capable of preventing the development of the bacteria of putrefaction, and aqueous infusions thick with bacterial life were cleared by such additions, the dead bacteria sinking gradually to the bottom, and the offensive odor disappearing.

Formaldehyde has been used to some extent as a preservative of milk in Great Britain. It has four times the potency of any other antiseptic commonly used for that purpose. Four or five drops of the forty per-cent. solution have prevented the souring of one hundred cubic centimetres of milk for six weeks. If it has been used for such purposes in this country, the fact does not appear to be generally known, for it was not mentioned by physicians discussing the adulteration of milk, at a meeting specially considering that subject, held last January, in the New York Academy of Medicine.

My attention was first called to formaldehyde, or formalin, by the remarks made by Dr. Louis Jack at a meeting of the Academy of Stomatology, and reported in the *International Dental Journal* for March, 1895; in which he related the cure of a pulpless, irritable tooth, that would not bear stopping up, by means of two applications of this remedy. It appears that Dr. Kirk had spoken of this substance to Dr. Jack. He having learned it from Dr. Mascort, who had treated indiscriminately many cases of alveolar abscess with it, at the St. Louis Hospital, and was quite enthusiastic over its use "as a root-dressing for putrescent cases."

On March 28, 1895, Miss B. (an invalid) called for the treatment of a lower bicuspid that was pulpless, and in that peculiar, irritable condition that will not endure the occlusion of the pulp-canal. The family had been my patients for some years, but this member had been referred to another dentist nearer to her home, because her poor health prevented her from being certain of ability to keep appointments, and this particular tooth had been—at the time of her call—under treatment for three months. The tooth was treated for several days before I recalled the reference to formalin I had read nearly a month before, and during this time various remedies were used with some apparent benefit at first, but later with renewed increase of irritability.

At this time, when convinced that I had gained nothing by what I had done, I looked up the record and obtained some formalin in five-per-cent. solution. The first application was made on cotton in the root-canal, and covered with cotton saturated with sandarach, so that the patient could remove it if necessary. She caught cold next day, and sent word she could not keep her engagement, and I did not see her for nine days. When she called again the dressing was *in situ* as I had placed it, and she had felt no discomfort from it. I renewed the dressing, covering it this time with a temporary gutta-percha stopping, and six days later the root was filled with oxychloride of zinc. This tooth gave no trouble after the first dressing of formalin was placed in the root-canal, and has continued perfectly comfortable and useful until the present time.

I have since had several similar cases to treat, and the application of formalin in five-per-cent. solution has been successful in all but one. The key-note of the remarkable and unique influence of this remedy is struck more clearly, I think, in this particular class of cases than in any other. No other medicament that I know of has such an effect. In the case described at length above, the other dressings used were impotent to enable the tooth to bear occlusion of the vent for more than a few hours at the best.

The exceptional case referred to was a cuspid that had been open and discharging slightly for several years, and careful examination convinced me that there was an opening through the side of the root near the apex.

Since using formalin successfully in the first one or two peculiar cases already referred to, I have gradually used it more indiscriminately in the treatment of the pulpless teeth, without fistulæ, and have found it peculiarly and wonderfully effective in disinfecting them, and removing all tendency to irritation from admission of air, or efforts to cleanse and prepare the root-canals, or from subsequent filling of the roots.

After considerable use of this substance, I discovered that it was possessed of decided deodorizing power, before I had consulted its literature sufficiently to find that this quality is claimed for it, as has been noted above. In one recent case in which I tested it, an offensive molar was treated in the root-canals with electrozone, without removing the bad odor, but a two-and-a-half-per-cent. solution of formalin made it quite free from all offensiveness in a few minutes.

I have not used it in the treatment of alveolar abscesses with fistulæ, but have tested its efficacy a few times in pyorrhœa alveolaris, and found that it seemed to have no special influence to diminish the formation of pus. My judgment of its therapeutic influence on tissues, to which it is applied, is that its special sphere is to allay irritability of the tissue and prevent inflammation and suppuration. It may have greater influence in reducing suppuration, and in favoring a return to normal conditions after pus has formed than I have discovered, and I hope that something more definite on this point will be reported in the discussion of this subject.

It is a powerful irritant, and the warning that Dr. Jack gave in the record before referred to—that is, that it should not be used in greater strength than a five-per-cent. solution—may well be heeded. Its application in root-canals in that dilution will sometimes cause pain, and I have even found it to give evidence of irritation in a two-and-a-half-per-cent. solution. But the pain has always passed away in an hour or two, when the dressing was left in the tooth, and has ceased in a few moments after the removal of the dressing, in those cases that caused complaint at the time. These evidences of irritation have been only in exceptional cases, and I have concluded, from my clinical experience, that it is most likely to cause pain when it is applied in the root-canals of teeth whose pulps have been recently destroyed; for which other dress-

ings would have been better. The inference is that its irritating properties are overcome by chemical action when it is brought into contact with putrescent matter. In my recent use of formalin I have found a two-and-a-half-per-cent. solution answer the purpose so well, both as a deodorizer and disinfectant, that I am inclined to believe that a stronger application is unnecessary. I have disinfected many putrescent pulp-canals with this substance in the two-and-a-half-per-cent. as well as the five-per-cent. solution, and filled the roots at subsequent sittings without the use of any other agent whatever for treatment, and have had remarkably satisfactory results.

In two cases only pain and swelling to a very limited degree followed the filling of the roots, and this I attributed to my own or the patient's anxiety to get the work finished, and off the list; being due rather to an error of judgment in filling too soon than to lack of efficacy in the formalin dressing. Formalin has some coagulating action on albumen, which is apparent even in the action of the two-and-a-half-per-cent. solution a few minutes after its contact with the white of egg. But the coagulating action of the forty-per-cent. solution is very much less decided than pure carbolic acid. Electrozone has no coagulating effect whatever. A five-per-cent. formalin solution added to meat broth,—that had been infected by a broach used in a putrescent pulp-canal, and allowed to become putrid,—showed in a test-tube much more vigor of chemical action and rapidity of clearing of the infection than did a similar test of electrozone added to the same putrescent liquid. I have found formalin to be very efficacious in disinfecting, without causing irritation, those cases of quiescent pulpless teeth whose pulp-cavities demand opening, but are very liable to have pericementitis supervene as a result of such opening.

When I was a young man, I was very much distressed by the evidence that was often presented to me that I had precipitated pain and suffering upon my confiding patients by opening their pulpless teeth. But I found, to my astonishment, that those whom I considered wise men could give me no special light or encouragement on the subject. Indeed, most of them denied that the opening of such teeth was the cause of any special solicitude to them. They applied some medicament which in their hands always prevented trouble, and each one had a different remedy; but

in my hands afterwards none of these agents proved of sure value in preventing inflammation, as the result of opening pulp-canals with putrid contents, that had been closed and were not causing irritation at the time.

Dr. James Truman wrote, in the "American system of Dentistry," 1885, "A dead pulp may remain for years—and it may be for life—very quiet if not exposed by caries, but may, in a few hours, produce violent pericementitis if exposed to the action of the atmosphere. It is, therefore, oftentimes a question in the diagnosis of such a tooth whether the great risk warrants meddling with it at all."

I think there is now a general recognition of the danger attending this procedure, but I fear it is not by any means universal among dentists, and I call attention to it to emphasize the importance of its being recognized, as well as to record the usefulness of formalin as an efficient preventive.

I had not found anything to serve the purpose as well as iodoform dissolved in alcohol and ether until the advent of electrozone. In 1884 I read a short paper on antiseptics, in which I referred to iodoform as the most effective safeguard against inflammation, as a result of opening quiescent pulpless teeth, and until I began to use electrozone as a disinfectant I had not dared to rely upon anything else in such cases. I have used the latter, however, with satisfaction ever since its introduction, and it undoubtedly has a certain soothing and reducing influence on inflamed tissues, besides its antiseptic power.

In exactly what cases, and in what conditions, solutions of formaldehyde will serve better than electrozone or other agents it will take some time to determine. Each remedial agent that we have has its limitations, and each has a sphere of influence that makes it better adapted to certain conditions than anything else would be, but there is no doubt that formaldehyde is a valuable addition to our list of medicaments, and it is probably destined to take the place of most of the prophylactics we have used heretofore. It simplifies and renders easy the sterilization of instruments and of everything that needs disinfection, and there can be no doubt that a one-half-per-cent solution is perfectly efficient for such purposes after the article has been previously cleansed in an ordinary way. Such a solution does no harm to

steel instruments, other than results from the application of water, and Drs. De Buck and Vanderlinden, of Ghent, have found it more efficient than a two-and-a-half-per-cent carbolic or a 1 to 500 sublimate solution.

I have noticed that an antiseptic lotion advertised for a mouth-wash has in the published list of ingredients a 1 to 1000 solution of formaldehyde in a proportion not given. I find that a one-half-per-cent. solution of formaldehyde, if rinsed vigorously about the mouth, produces a stinging sensation, suggesting the effects of capsicum, and even a one-fourth-per-cent. solution does not cease to have a similar effect on the mouth and fauces, although the sensation of astringent action is also perceptible with the latter. As far as antiseptic power is concerned, we may certainly count upon its value here also, but what medicinal effect it will have on the mucous membranes and gum tissues will have to be determined by experimental use.

It is apparent that this substance has a medicinal influence aside from its antiseptic effects, and that a great portion of its value to us depends upon its peculiar medical action. The irritable condition of a pulpless tooth that will not bear stopping up is not amenable to control by antiseptic treatment alone, unless the agent used has also a medicinal influence on the tissues. And the same thing is true regarding the contents of pulp-canals in pulpless teeth that threaten to produce irritation by access of air or germs. The application of the most potent antiseptic is not so certain to avert unfavorable symptoms as is the use of iodoform, which is rather low down in the antiseptic scale, but which has a certain power aside from germicidal action that produces a beneficial effect on living tissue. In other words, the usefulness of medicaments, suitable for the treatment of abnormal conditions of living tissue, cannot be expressed in terms of antiseptic power. The latter has engrossed attention to such a degree during recent years as almost to exclude the fact altogether that almost every agent used has a medicinal or toxic action, which may be beneficial or the reverse.

The preserving and hardening effects on tissues that have been manifested by formaldehyde suggest that it may be found of service in efforts to preserve and make innocuous those dead pulps, or portions of pulps, that circumstances make it desirable or ex-

pedient to leave *in situ*. Any simple and quick means of accomplishing this would result in such a great saving, to both patient and dentist, that all must regard it as a desideratum.

Probably we would all agree in the opinion that no treatment of a pulpless tooth can ever fulfil the requirements of placing it in the safest condition for the longest time, as does the complete filling of the root-canals with an impermeable substance; but there is a possibility of approximation to the ideal condition of safety by some other less arduous and expensive method. Several experimenters and writers have discussed this subject in recent years, and I hope this new agent—formaldehyde—may serve to forward to success efforts in this direction. The teeth of the multitude, who cannot afford either time or money for difficult and expensive operations, need to be saved by simple and inexpensive methods, and I am sure we all sympathize with every effort to render the process of saving teeth easy and simple.

In commending formaldehyde to your attention and study, it is with the conviction that it is to be a very valuable addition to our equipment of therapeutic agents. The limitations of its usefulness will soon be discovered, but at present its value is undoubted in the treatment of foul pulp-canals and irritable apical tissues, and in the disinfection of anything that needs such cleansing.

QUACKERY DEFINED, by Geo. F. Shrad, in *Forum*. Quackery is medical practice commercialized, and therefore prostituted. It thrives because the victims are in the majority and are easily reached by lying advertisements. "What is the proportion of sensible people in this crowd?" asked a patent medicine man of a physician. "About one in ten," was the answer. "I take the nine and leave the one to you," said the quack. This represents the majority which helps to make the quack rich. The nostrums cost almost nothing; but the capital is used in advertising; in making pictures of the idiots and feeble-minded who imagine themselves cured; in placarding fences; in defacing scenery; in publishing manufactured certificates; in ridiculing scientific medicine; in alarming the credulous; in claiming false discoveries; and in vaunting impossible results. But these are the men who make the money. Medicine to them is the nickel-in-the-slot machine. The diagnosis is ready-made to suit every need, and even otherwise sensible people are being educated into the belief that every man can be his own doctor and not have a fool for a patient.

The Dental Digest.

PUBLISHED THE

TWENTIETH DAY OF EVERY MONTH.

Editorial.

ARE THE DENTAL JOURNALS AT FAULT?

We are led to ask this question by the remarks which Dr. W. E. Driscoll makes in his article, on page 311 of this issue. He says:—"This is the longest reference to lining cavities with cement I have ever seen in a dental journal, except what I have contributed during the past nine years. If the general understanding of the matter is as faulty as I take Dr. Palmer's reference to it to be, I am not surprised that no one writes on the subject, or that one would surmise there was no such thing practiced, so far as the dental journals refer to the matter." Again, "The silence of the dental journals on the subject of cement linings for amalgam and gold fillings is one of the wonders of the times."

In our opinion it is not the fault of the journals, but of the dental profession, for, as we have said before, they write very little for a profession. Last month we wrote about the manipulation of amalgam and asked for opinions on the question, and have received just one reply thus far. If the dentists do not write upon a subject the dental journals must not be blamed for not having articles upon that subject, for they are simply the mouth-pieces of the profession.

THE COLLEGE FACULTIES ASSOCIATION.

We showed in another place the importance of the National Board of Examiners, and urged that each state send a good representation. It is not necessary to urge this in regard to the colleges. Their association is better organized and its rules compel each college to send its representative, and while we hear adverse

criticism, we regard this as a wonderful organization for good. In fact, it is hard to conceive what would be the condition of the educational institutions of our profession were it not for the College Faculties Association. As yet it is not perfect by any means, but each year shows a decided improvement, and we hope to live to see the day when a much higher grade of education will be required from the matriculates. In this regard the colleges have absolute control, the profession not knowing or coming in contact with the students until they have entered our ranks as dentists. Therefore, let the colleges look well into this their responsibility, for if they do not, who will decide what the future of our profession shall be?

THE AMERICAN DENTAL ASSOCIATION.

This is the representative organization of the profession. It should therefore have delegates of the best talent from every State and local society in the United States. It should also have, in its section reports, a digest of all the important professional and literary work done by each society during the year. This feature of the work of the American Dental Association has been sadly neglected, most of the societies having apparently no interest or connection, except in having someone come as a delegate. Preparations are being made to have the section work of the Association made much more complete, and to have more time spent in the sections to eliminate much of the crude matter from its proceedings. Therefore, let every dentist interested in the upbuilding of his profession come and bring something of interest with him, so that the American may in reality become the representative association of the profession.

THE NATIONAL BOARD OF DENTAL EXAMINERS.

This body, which is composed of the various State boards of dental examiners, we regard as the most important organization now in existence in the profession, because of the responsibility resting upon it. It has the authority to decide what the qualifications of those entering the profession shall be, as well as the

power to make the requirements for practitioners who wish to practice in another State. Furthermore, it is the duty of this body to make the rules which regulate the colleges and to decide which colleges are reputable. As all its rulings are sustained by the courts, its word is law.

Do the various state boards realize what a responsible organization their representatives compose, under the name of the National Board? We fear that they do not fully comprehend its importance, yet it can do more to improve the character of our profession than any other organization. Therefore, each State board should send its best representatives, and so make the National board even more of a power for good than it is now.

Notices.

NEW JERSEY STATE DENTAL SOCIETY.

The twenty-sixth annual session of the New Jersey State Dental Society will be held in the "Auditorium," at Asbury Park, N. J., July 29-31. Essays on subjects pertaining to dentistry will be read by the most eminent men in the profession. Twenty-seven clinics on the afternoon of the 29th will be of the utmost interest. Fifteen hundred feet of space for exhibitions already nearly filled. Many new electrical appliances exhibited for the first time. New Jersey headquarters, "The Columbia," rates, \$2.50 to \$3.00 per day. Board in the Park from \$8.00 to \$45.00 per week. Cut off the time and come and see us.

CHAS. A. MEEKER, D. D. S., Sec'y.

THE AMERICAN DENTAL ASSOCIATION.

The annual meeting will be held at Saratoga Springs, N. Y., July 31-Aug. 6, 1896. The Grand Union Hotel will be the head-quarters, and the meetings will be held in the hall of this hotel. Committee rooms and ample space for exhibits will also be provided. The ball-room and concert hall are placed at our disposal.

Dr. Doolittle of Saratoga, has kindly consented to act as one of the local committee, and will give any information or assistance in his power.

The Railroads have granted the usual fare and one-third on the *certificate* plan. Pay full fare in going and *be sure* and take a *receipt* when you buy your ticket, as you cannot obtain the one-third rate in returning unless you hold a receipt.

J. N. CROUSE, Chicago, Chairman Ex. Com.

COLORADO STATE DENTAL ASSOCIATION.

The tenth annual meeting of this Association was held in Denver, June 9-11, 1896. The following officers were elected for the ensuing year:—Pres., J. H. Parsons, D. D. S., Boulder; 1st vice-pres., Sarah May Townsend, D.D. S., Denver; 2nd vice-pres., R. A. McGee, D.D. S., Salida; Cor. Sec'y., J. S. Jackson, D.D. S., Denver; Rec. Sec'y., A. L. Whitney, D.D. S., Denver; Treas., Wm. Smedley, D.D. S., Denver.

The next meeting will be held at Colorado Springs, the second Tuesday in June, 1897.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The twelfth annual session will be held at Saratoga Springs, N. Y., commencing 10 A. M., Monday, August 3rd, and continue in session during the proceedings of the American Dental Association.

It is earnestly requested that all State and Territorial Boards of Dental Examiners will send delegates.

CHAS. A. MEEKER, D. D. S., Sec. and Treas., 29 Fulton St., Newark, N. J.

MINNESOTA DENTAL ASSOCIATION.

The thirteenth annual meeting of the Minnesota Dental Association will be held in Winona, Aug. 19-21, 1896. The Executive Committee decided to change the date from the usual time to the above date. The meeting will be more practical and interesting than ever. Among the social features will be an excursion on the Mississippi River, given by the Winona County Dental Society. A cordial invitation is extended to all to join with us.

H. L. CRUTTENDEN, D. D. S., Sec'y, Northfield, Minn.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of the National Association of Dental Faculties will be held at Saratoga Springs, on Saturday, August 1st, at 10 o'clock A. M. The Executive Committee will meet on Friday, July 31st, at 10 o'clock A. M. Those having matters to bring before this Committee will do well to bear this meeting in mind. The work of this Committee is preparatory to that of the general meeting. All communications requiring the attention of the Executive Committee should be sent to the Chairman.

DR. J. TAFT, Chairman of Exec. Com., Berkshire Bldg., Cincinnati.

DR. LOUIS OTTOFY, Secretary, Masonic Temple, Chicago.

INDIANA STATE DENTAL ASSOCIATION.

The Indiana State Dental Association will hold its thirty-eighth annual meeting in the new Indiana Dental College building, at Indianapolis, commencing Tuesday, June 30th, at 10 A.M. All members of the profession are cordially invited to attend.

The State Board of Dental Examiners will meet at the same time and place.
M. A. MASON, D.D.S., Sec'y, Fort Wayne, Ind.

News Summary.

ST. LOUIS, June, 1896.

Editor of Dental Digest.

DEAR DOCTOR:—I have just received news of the death of Dr. C. W. Spaulding, at Riverpoint, R. I., June 9th, 1896, aged 82 years.

Yours truly, WM. N. MORRISON.

WANTED.—Position as operator in private practice. Chicago preferred. Can guarantee satisfaction. Address Dr. E. P. Binford, 3510 Prairie Ave., Chicago.

UNDESIRABLE IMMIGRANTS.—Doctor J. W. Achorn communicates to the *Dietetic and Hygienic Gazette* some interesting facts as to the physical condition of some of the immigrants admitted to this country from abroad, practically without examination—facts which should claim serious consideration by our national law-makers. He says that a steamer on which he returned from Europe brought 600 Italians, Hungarians, Polish and Hungarian Jews, Russians, Bohemians, Arabs and other steerage passengers, among whom were seven lame and eighteen deformed. He examined 153 of the total 600, and found four cases of advanced phthisis, six of inherited syphilis, two of foetid abscess, three of syphilis, one of delirium tremens, nine of rickets, "any number of skin diseases parasitical and otherwise," two of favus of the scalp, and three of chronic ulcer of the leg. Only one of the 600, a man with cataract of the left eye due to syphilis, was refused admission to the country.—*American Journal of the Medical Sciences*.

SALT FOR TOOTHACHE.—It is surprising that medical men should not take a little trouble and inform themselves as to the different pathological conditions which give rise to the varieties of "toothache." Like the general public they are not inclined to differentiate a variety but simply recognise the general term. For instance, one practitioner having written to a medical paper to recommend the insufflation of common salt to relieve the pain, another follows with his explanation as to the *rationale* of the process. He thinks it to be one of those effects of thinning or defibrinating stagnant blood which salt shows as well as salicylate of soda, antipyrin, potassium iodide, etc. Given to a blood-giver in a case of transfusion, these drugs all prevent clotting in the canula; and there is no pain without congestion and consequent *stasis* of blood.

as in furunculus, toothache, tic or inflammation anywhere. Whatever may be the effect of chloride of sodium applied to an exposed pulp, we are rather sceptical as to the salt reaching an inflamed periodontal membrane unless applied as a root dressing through the apical foramen!—*Brit. Jour. Dent. Sc.*

COCAIN HYDROCHLORATE IN DENTAL NEURALGIA.—According to the *Lyons Medical*, for January 5, odontodol is the name given in Italy to a new preparation which has proved very efficient in the treatment of dental neuralgia. The formula is as follows:

Cocain hydrochlorate.....	15 parts,
essence of cherry-laurel.....	15,
tincture of arnica.....	150,
sol. of ammonium acetate.....	300.

If the pain is caused by caries, a piece of cotton saturated with the liquid is put into the cavity of the tooth; if it is caused by inflammation of the pulp, the mouth should be washed out with a solution consisting of one part of odontodol diluted with two parts of a tepid decoction of linseed. Finally, if the pain extends to the entire jaw, the painful surface should be thoroughly rubbed with several drops of odontodol, after rinsing the mouth with the solution.—*Journal American Medical Association.*

SYPHILITIC TEETH WITH ICTHYOSIS.—An interesting case of ichthyosis in a patient exhibiting characteristic syphilitic teeth is recorded (*Loire Médicale*) by Dr. Roussel. The patient was a girl aged 21. The upper and lower incisor and canine teeth presented characteristic defects. The stem of the whole body was mal-nourished, dry, rough, and inelastic. The outer aspects of the arms were covered with small projections due to hypertrophy of papillæ. The summits of these projections were crowned by horny pellicules, which could be rubbed off. The legs, particularly externally, presented a similar condition, being covered with small papules, of which the summit was formed by a scale. Desquamation existed also at many points where papillary projections were not present. If a considerable extent of skin were drawn together by the hands it showed very plainly the ichthyosic appearance—that is, a great number of lozenge-shaped markings became visible, with their centre occupied by an epidermic lamella. On the body were numerous small cicatrices, and one larger on the sacral region, white, elongated and adherent. The smaller of these markings were attributed to a previous attack of small-pox. This is the second case in which Dr. Roussel has noticed ichthyosis and syphilitic teeth in the same subject.

IS THE HUMAN RACE DETERIORATING?—The February number of the *North American Review* contains an article upon this subject which is rich in statistical lore. Out of it we extract some facts that are of interest to medical readers. The author shows by the statistics of births, deaths, and marriages of the seven principal European nations, that the birth rates in these nations have declined, notably since 1880, but that the death rate has declined still more, so that the surplus of births over deaths is rising. It is also shown that marriage-rates have declined since 1880, but that the number of children to a

marriage has increased, and that the natural increase of population has proceeded with greater rapidity in the last ten years than it did before. He also shows that in the United States there has been a steady decline in the rate of increase of population, but that the annual increase of American-born population has been a uniform one up to the last decade, when it fell to $17\frac{1}{2}$ per thousand. This declining ratio has been coincident with a very great increase of the city population and a decrease in the relative number of children. One striking fact is brought out, namely, that in the United States there are more children per thousand inhabitants than in any European country; thus the number of persons under 15 years of age per thousand inhabitants in this country is 368, while in France, which furnishes the other extreme, it is only 266. Still another fact, which is not of so pleasant a character, is that the span of life in the United States is shorter than in Europe. Comparatively few people in the United States pass the age of 60. Thus, the number of persons 60 years or more of age among 1,000 persons over 20 years of age is in the United States 107, while in England it is 134, and in Ireland 196. It seems, therefore, that in the United States the rate of increase in population is diminishing, that the number of children per thousand is greater than in any other country, but is decreasing, and that old age is not so often reached as in other lands.—*Medical Record*.

Obituary.

IN MEMORIAM.

Think not of the tearful parting,
For beyond death's turbid tide,
We will someday meet our Brother,
Heaven is on the other side.

Death is always an unbidden guest, but when it comes and takes from us one of our friends, in the prime of manhood, in the midst of usefulness, its presence is indeed unwelcome.

Dr. W. F. Bradner graduated from Ann Arbor, Mich., in the spring of 1881, and entered actively upon the practice of his chosen profession. In 1888 he moved to this city and soon took high rank among his professional brothers in Denver.

He was one of the active members of this association, and was present at every meeting until last year, when failing health prevented his attendance. His genial, affable manner, his modest, manly bearing, his intelligent, skillful operations, soon brought him a lucrative practice, and none of our associates endeared himself more lovingly and firmly to us than did Dr. W. F. Bradner.

Today we miss his presence and wise council, for he is gone, gone higher where he waits his loved one on the other shore.

Let us keep green in our hearts his many virtues, while we strive to emulate his worthy example.

J. M. NORMAN, D.D. S. }
W. S. JACKSON, D.D. S. } Committee.
M. H. SMITH, D.D. S. }

The Dental Digest.

Vol. II.

CHICAGO, JULY, 1896.

No. 7.

Original Contributions.

ADENOID GROWTHS OF THE NASO-PHARYNX AS FACTORS IN DENTAL DISEASES AND DEFORMITIES.

BY T. C. EVANS, M. D., LECTURER ON OPHTHALMOLOGY, OTOTOLOGY, ETC., KENTUCKY SCHOOL
OF MEDICINE, LOUISVILLE, KY.; READ BEFORE THE KENTUCKY STATE DENTAL
ASSOCIATION, JUNE 16-18, 1896.

The naso-pharynx is that part of the respiratory tract lying immediately behind the posterior opening of the nasal chambers and above an imaginary plane extending from the free margin of the soft palate to the vertebral column. This naso-pharyngeal space varies considerably in size in different individuals. Ordinarily in the adult it measures about one inch in its vertical diameter, three-fourths of an inch in its antero-posterior diameter, and one and one-fourth inches from side to side. In children it is, of course, much smaller. On the lateral walls of this space are the openings of the Eustachian tubes. The lining of the cavity partakes of the general character of the mucous membrane of the respiratory tract, the epithelia are cylindrical and ciliated. Grouped together on the roof and posterior wall of this cavity are masses of lymphoid tissue. These masses closely resemble in structure the faucial tonsil and are sometimes designated as Luschka's tonsil or the third tonsil. They are more generally known by the term "Adenoid Growths."

The anatomy, physiology and pathology of this space interests the dental surgeon, not so much from its contiguity to his field of operation as from the fact that during childhood and early adolescence the lymphoid masses that stud its roof and posterior wall are prone to hypertrophic changes. This hypertrophy lessens or obliterates the lumen of this portion of the respiratory

tract, mechanically interfering with or altogether inhibiting nasal respiration.

In this brief paper it will be impossible to enter into a discussion of the etiology or pathology of adenoid growths or to give a detailed description of the many complications and sequelæ that accompany or follow the affection. Those that more directly concern the dental surgeon are secondary and follow as the result of mouth breathing. Just here I wish to digress far enough from the subject to say that, in spite of all that has been said and written on the mouth breathing "habit," no such habit exists. "Mouth breathers" we all see many and often, but they are such from necessity and not from habit. Contrary to the general impression, the obstructive diseases of the nasal cavities proper, the turbinated hypertrophies and turgescences, the much reviled "nasal catarrh" of the laity—so common in adult life, are exceedingly rare in childhood.

While I am unable to give statistics, I think it safe to conclude, judging from my personal experience, that up to the twelfth year fully ninety per cent. of the cases of mouth breathing result from adenoid obstructions in the naso-pharynx.

An examination of the mouths of children suffering from adenoid growths will show that a large majority of them are the subjects of dental irregularities. In the younger ones will be found the contracted arch and elevated palate,—the V-shaped maxilla—later in life this deformity is increased by the eruption of the permanent teeth, which, owing to the contracted arch, are forced into various malpositions. Among the results of dental irregularities may be mentioned the distortion of the features, the obliteration of the lines of expression, indistinct speech, a predisposition to dental caries, and disorders of the alimentary tract following imperfect mastication. When we take into consideration the frequency with which dental irregularities complicate or follow obstructions in the naso-pharynx, and the influence that these irregularities must exercise on the appearance, health, development, and well being of the patient, it seems strange that in the medical literature of adenoid growths little or no attention is paid to the subject.

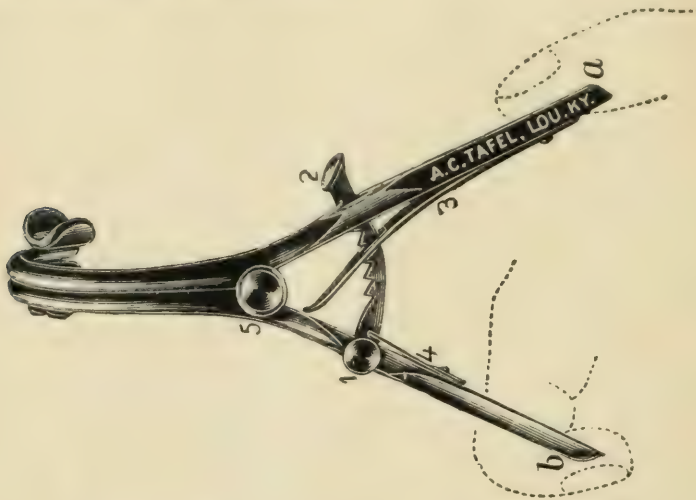
The dental surgeon has accomplished wonders in the correction of these deformities, but his energy and ingenuity seem to

have been expended chiefly in perfecting the mechanism of his appliances, as the literature of orthodontia makes only brief mention of "adenoid growths" as an etiological factor in dental irregularities. Thus the throat surgeon removed the cause without correcting its effects and the dental surgeon corrected its effects without removing the cause. That the V-shaped maxilla follows as the direct result of mouth breathing I have no doubt; just how it is produced is difficult to explain. I believe the elevation of the palatine arch is more apparent than real, and the chief change consists in a contraction and elongation of the alveolar arch, and that this is produced partly by the loss of occlusion from the constantly open mouth, and partly by the tension and weight incident to the depression of the inferior maxilla.

The diagnosis of adenoid growths is easily made from the characteristic symptoms that have so often been described—the open mouth, the contracted arch, the elongated face, the expressionless countenance, the dead or nasal voice, the inability to articulate certain consonants, the discharge of viscid mucus from the nose, the disturbed sleep with its sweats, snoring and night terrors, the chest deformity, deafness and mental hebetude, all of which make a picture that can hardly be mistaken. But if these are not sufficient, positive evidence can be had by passing the index finger into the naso-pharynx and making thorough survey of its walls and contents. This procedure is easily accomplished, and while causing considerable pain it cannot possibly do harm.

The treatment of adenoids of the naso-pharynx is either expectant or surgical. The probability of favorably affecting lymphoid hypertrophies by the use of drugs, either topically or constitutionally, is so remote as to scarcely entitle it to consideration. The expectant plan—the "outgrowing" process, which the parents so confidently count on—has at least this advantage, that the hypertrophy usually diminishes with age, and sometimes entirely disappears with adolescence. The cavity of the naso-pharynx is proportionately larger, so that the respiratory obstruction, so far as the naso-pharynx is concerned, is diminished, or altogether disappears. On the other hand, the deformities due to years of mouth-breathing do not disappear with the "outgrowing" of the obstruction. The high-arched palate, the contracted nasal chambers, the deformed alae, with their small round nostrils, the list-

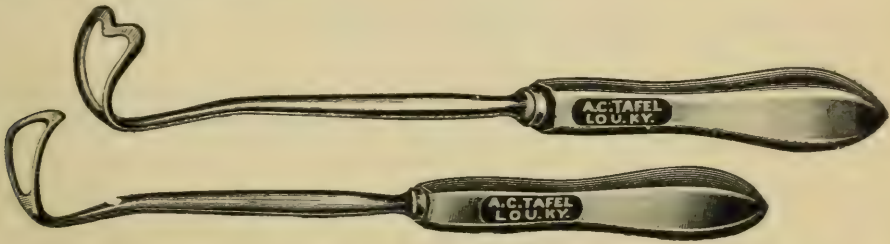
less facial expression, due in part to the deformity and in part to the impaired hearing, have by this time become so much a part of the physical make-up that neither time nor treatment can effectually efface them. The expectant plan is, at best, long, tedious and uncertain, entailing years of suspense on the physician and parents, and subjecting the patient to dangers which, when once encountered, cannot be corrected.



It will not be necessary to review the many operations that have been devised and the almost endless list of instruments and appliances that have been invented for the removal of adenoids—most of which have now been abandoned. Most operators now confine themselves to one of three methods, viz., the post-nasal curette, the post-nasal cutting forceps, destruction by the galvano-cautery. Personally I am partial to the curette, preferring what is known as the improved Gottstein, which I show you here. In many cases this will be all the instrument necessary to complete the operation. In young or unmanageable children a mouth gag will be needed; for this I prefer the O'Dwyer gag, as being the least complicated and the most satisfactory. With the Gottstein curette, supposing that the operator is at all familiar with the anatomy and contour of the naso-pharynx, it is almost impossible to lacerate the soft palate, the Eustachian tubes, or the posterior border of the vomer, all of which are endangered with the cutting forceps.

Having decided on an operation with the curette, the chief question will be whether or not a general anæsthetic is required.

The hemorrhage after the operation is quite profuse for a few minutes, making an annoying and troublesome complication in the use of anæsthetics. This danger can be lessened but not entirely obviated by the position of the patient during the operation, placing the head lower than the body so that the blood will gravitate away from the larynx. As a rule I operate without an anæsthetic. While it is, of course, a disagreeable operation, it is not excessively painful; patients who were old enough to talk intelligently have often told me that curetting produces little more pain than the preliminary exploration of the naso-pharynx with the index finger. Cocaine seems to do little good in these cases and is not well borne by children. There does not seem to be any tendency to a recurrence of the growths. The dangers from the operation, other than those due to the administration of anæsthetics under adverse conditions, are almost nil. There is no shock and the subsequent discomforts are rarely sufficient to confine the patient to bed.



In closing this paper I wish to submit to your consideration the following conclusions:—

That the acquired forms of dental irregularities, with but few exceptions, are the result of the position, weight, and tension incident to oral respiration, either continuous or intermittent.

That mouth breathers are not such from habit, choice, or stupidity, but from necessity, owing to some disease or deformity of the nostrils, nasal cavities or naso-pharynx.

That in childhood it is exceedingly rare to find obstructive disease of the nasal cavities proper of sufficient severity or extent to make mouth breathing a necessity.

That mouth breathing in children under twelve years of age is, in the vast majority of cases, due to obstructions in the naso-pharynx by adenoid growths.

That the viscid mucus which hangs from the nostrils in ropy masses, and adds to the untidy appearance of many of these un-

fortunate mouth breathers, is not of nasal origin but is a perverted secretion from the naso-pharynx.

That adenoid growths are not amenable to medicinal treatment, either local or constitutional.

That removal by surgical means offers, up to this time, the only rational and successful method of treatment.

That, with the post-nasal curette, with or without a general anæsthetic, they are quickly, safely, and permanently removed.

That while the removal of the obstruction and the re-establishment of nasal respiration will not be sufficient to correct the deformity that already exists, with the removal of the cause the dental irregularities are more easily, speedily and perfectly corrected.

That in addition to the dental complications, mouth breathing lowers the vitality, disturbs the digestion, impairs the intelligence, distorts the features and deforms the chest.

That most of these adenoid subjects suffer from impaired hearing, owing to the recurring attacks of catarrhal and purulent otitis media.

That these children are peculiarly susceptible to the contagion of diphtheria and scarlet fever and that tubercular infection often takes place through this channel.

CANCNUM ORIS—A CASE IN PRACTICE.

By J. P. SHAW, D.D.S., BURKESVILLE, KY., READ BEFORE THE KENTUCKY STATE DENTAL ASSOCIATION, JUNE 16-18, 1896.

Because of Cancrum Oris occurring so rarely in an adult I have prepared this paper. All writers treat this disease as one peculiar to children in crowded districts, where the lack of fresh air and a healthful diet, together with scrofulous and syphilitic tendencies, act as predisposing causes, and cite only a few cases where gangrene occurs in adults.

It is not my intention, however, to attempt a treatise on Cancrum Oris, nor to embellish my paper with high-sounding phrases or technicalities, but as concisely as possible to detail the case as it came under my observation. This paper is a compilation of notes taken by myself and Dr. W. C. Keene, the physician in charge, and the case is as follows:

The patient was about thirty-five years old. For several years he had lived in Southern Missouri and in Arkansas, returning to this, his native state, a few months previous to his illness. His occupation was that of a "cropper," or farmer on shares, his life consequently an active one. His diet was very plain, consisting chiefly of cornbread and pork. At this time he was apparently in good health.

About the last week in May he had a left inferior first molar extracted by a physician. A few days later he sent for the same physician, complaining of a sore mouth for which no relief was afforded. On June 3rd, Dr. W. C. Keene was called in and later myself. An examination resulted in the diagnosis of gangrene, and the disease was found to be considerably advanced. The cheek, as well as the gum-tissue, was involved, the sloughing was very great, and the discharge offensive.

All of the part involved was thoroughly scraped and all appearance of diseased tissue removed, and the part was then well cauterized with nitrate of silver. A nourishing diet was ordered and a tonic of iron and quinine prescribed. At the second visit the socket of the tooth, where the destruction had been greatest, was again scraped and an application of tinc. muriate iron made. A mouth-wash of tinc. myrrh, listerine, and Condy's fluid, was ordered to be used *ad libitum*. This course of treatment was followed with very happy results, as healthy granulation was established and a decided general improvement. June 10th the patient was dismissed, as he was sufficiently convalesced to resume his work on the farm.

On June 18th the case again required attention, and an examination showed that the disease had progressed to an alarming extent. An attempt was again made to remove the sloughing tissue, but it was fruitless because of the extent. The former treatment was resumed as far as possible, but without any good results, the patient dying July 2nd.

The general condition of the patient during the progress of the disease will perhaps be interesting if not instructive. At no time was there a perforation of the cheek, and the extension of the disease was confined principally to the left side, although all the tissue of the oral cavity was affected. By introduction of the probe it was very apparent that the osseous tissue was not only

denuded but must have been acted upon. It seemed as if the probe would extend almost to the orbit, but an examination, or any attempt to treat the jaw, was so painful that it had to be given up during the last few days, when the disease had progressed to its greatest extent. Because of the swelling and distortion nothing could be determined except by examination with an instrument. The gums extended over all the teeth in both the upper and lower jaw.

From the period of relapse the glands of the neck were swollen and the face greatly distorted. Later the glandular system throughout the entire body was involved, seeming to be greater on the left than on the right side.

The patient complained of fainting spells at night and of a constant severe headache. I cannot state the condition of the bowels, but heard no complaint of diarrhea, as seems to be true of children similarly affected.

No hemorrhage occurred at any time except when diseased tissue was being scraped. There was a constant expectoration of a fibrous greenish discharge, which was unbearably offensive during the last few days.

Nothing could be ascertained from family history as a predisposing cause, and from all the indications this seems to have been a true case of Cancrum Oris.

ADDRESS OF PRESIDENT.

BY J. F. REES, D. D. S., OWENTON, KY., READ BEFORE THE KENTUCKY STATE DENTAL ASSOCIATION, JUNE 16-18, 1896,

Gentlemen of the Kentucky State Dental Association: We meet on this twenty-sixth anniversary of our association, for the purpose of correcting past errors, discussing whatever new things may be presented, and adopting such as may appear of benefit to the public and ourselves.

The duty of one should be the duty of all, everyone alike should take an active interest in the discussion of papers and such other matters as may come before the meeting, the success of which will be measured by our enthusiasm as a body.

There has been no pronounced advancement made in any department of our science since our last meeting, and yet I am

sure we have all acquired greater skill in our work. If we will look back but fifty years and see the crude dentistry of that time, and compare it with that of to-day, to the thoughtless it would perhaps appear that we had reached the zenith, that the skilled dentist of to-day knew about all there was to know, whereas the truth is, that we are merely on the threshold of our science, and the developments of the next fifty years will no doubt be greater than those of the past fifty.

I believe that the time is near at hand when dentistry will be divided into many different specialties. Prosthetic and operative dentistry will be distinct, and they, in turn, will have their subdivisions. There will be specialties in crown and bridge work, irregularities, implantation, pyorrhea, etc. This condition will come gradually, in fact we see it to some extent to-day. God speed the day when it does come. I am convinced that Louisville could liberally support a half-dozen or more skilled specialists in pyorrhea alone.

Popular dental education is a subject that has been ably and extensively written upon, and yet it has signally failed to find lodgment in some directions where we have a right to look for results. Right here I wish to say that the ignorance of the medical profession as a class in regard to the teeth and their reflex action is a great hindrance to us. It is a well-known fact that three-fourths of the so-called facial neuralgia is caused by the teeth, as well as many other complicated troubles which are often treated unsuccessfully by physicians until the cause is removed.

In view of these conditions I feel impelled to suggest that a committee be appointed by this Association, with power to confer with the faculties of the various medical colleges of the State. A plan can then be devised to have a chair of dentistry in each college, or at least some provision can be made to have a course of lectures on oral surgery during each term, so that the medical practitioners of the future will learn to first examine closely the teeth of their patients before treating them for any trouble which could be caused by the teeth.

We have now forty-eight dental colleges in the United States, and the forty-two that reported last year had 5,277 matriculates, graduating 1,226. Colleges and graduates will continue to in-

crease, and if all who obtained the degree of D.D.S. were worthy of the name it would not be amiss, for there is plenty of room and work for all. But this, unfortunately, is not the case, and it seems incumbent upon us to devise some means of raising the standard of proficiency. There has already been much written and said upon this subject, but we are still confronted with the fact that this matter needs a remedy. That which would go far towards curing the evil would be to succeed in getting all dentists to attend their State and local meetings, a thing which we have thus far failed to accomplish.

The Dental Protective Association is a subject of sufficient importance in my judgment to be again brought before this meeting. This organization is gotten up by dentists, is managed by dentists, in the interest and for the benefit of dentists, and saves our profession many thousand dollars annually by watching and defeating the patent sharks. As you all know, this matter needs no eulogy from me; its benefits are so widely and equally distributed that it should by right command the support of every dentist in the country, and I am surprised that it is so poorly supported. I beg to urge those who are not already members to send in their names, accompanied with \$10.00, and become enrolled to make war upon a common enemy.

BALSAMO DEL DESERTO AS A ROOT FILLING AND NERVE CAPPING.

BY DR. C. G. EDWARDS, LOUISVILLE, READ BEFORE THE KENTUCKY STATE DENTAL ASSOCIATION, JUNE 16-18, 1896.

The subject of root canal fillings is one which has probably been more written and talked about than any one operation which we are called upon to perform in the oral cavity, and yet the subject is not entirely exhausted, nor are we altogether happy. We are still searching for the ideal filling—something which will so close the foramen, and fill the attenuated and tortuous canals in such a manner, that pathogenic germs, if present, will not only be destroyed, but embalmed, and the filling be so complete for all time as to prevent the ingression of anything which might contain the dreaded microbe.

I shall not deal here with the etiology, pathology, or the application of therapeutics, which are usually associated with root

canal fillings. The mineral, vegetable, and animal kingdoms, and mineral cements have been drawn upon for substance to fill the roots of teeth. Gold, lead, tin, the oxychlorides and oxyphosphates, wood, cotton, gutta-percha, beeswax, etc., are or have been used, each having its advocates.

For some years gutta-percha has been almost universally used. Owing to its plastic nature under the influence of a moderate degree of heat, and its solvent property in chloroform, it is easily and readily conveyed through long and crooked canals to the apex of the root. It is non-irritating, and is said not to disintegrate, but many distinguished operators have not adopted it for the reason, as they claim, that in the case of chloro-percha, by the evaporation of the chloroform the gutta-percha is left in a contracted state, leaving a vacuum which for obvious reasons would be objectionable.

About a year ago I read an article in the *International Journal*, by Dr. W. H. White, of New Mexico, advocating the use of a new material which he had discovered. In the October number of the same journal appeared a second article by Dr. White, giving a more extended experience with what he called "Balsamo del Deserto." In this article he gives a record of 138 abscesses treated, and the canals filled with Balsamo del Deserto, without the slightest irritation following. Making due allowance for the enthusiasm of a discoverer, this balsam of the desert is a rather remarkable and important material, according to Dr. White's claims.

Balsamo del Deserto is a substance resembling bees-wax in color and about the consistency of thick honey; it possesses a slightly fragrant aromatic odor; is very adhesive and insoluble in water and the secretions of the mouth, but is soluble in alcohol. Dr. White claims it does not dry out or harden, that it clings to the walls of the canal or damp surfaces, and is permanent.

I wrote to Dr. White last October and he kindly sent me two bottles of the balsam. I immediately began to experiment with it, not only as a root filling, but also to cap exposed pulps. My first case was an abscess of long standing—what is termed a "blind" abscess—the foramen being very large and open. The following morning I was called upon to relieve a very sore tooth and a swollen face. My second case was a failure, more disap-

pointing than the first, though the result was not so painful. The perfect ease and rapidity with which the fillings were removed, and the relief being so prompt, I was neither dismayed nor discouraged; I was merely experimenting. I changed my methods of manipulation, and since then, in about fifty cases, I have not had a failure to my knowledge. I have also capped ten or twelve exposed pulps, several of them being complete exposures, with the loss of but one so far as I know.

Whether or not it is an antiseptic, as claimed, I am unable to state, but from its physical nature alone I am inclined to regard it as much superior to chloro-percha, and it is more readily conveyed to the canal and is always ready for use. The method of using it which I have adopted is, to substitute it for chloro-percha, using the gutta-percha cone when it is feasible. In capping exposed pulps I use the balsam on a piece of sterilized paper, laying it directly on or over the pulp, and proceed as in any other capping.

As a matter of fact, seven months is an insufficient time to test the permanency of any material, yet in the case of alveolar abscesses, or where there is a devitalized pulp to be considered, unless sterilization has been complete, seven hours may not pass without apical irritation or inflammation. My experience certainly tends to corroborate most of the substantiated claims of Dr. White for this balsam.

INCIDENTS OF OFFICE PRACTICE.

BY DR. HENRY PIRTLE, LOUISVILLE, READ BEFORE THE KENTUCKY STATE DENTAL ASSOCIATION, JUNE 16-18, 1896.

In presenting these few incidents which have come under my notice, I have not arranged them in the form of a paper, and do not relate them because of their merits, but give them with the hope that they will incite other members of this Association to report unusual cases.

The first case is that of an impacted third molar. In November, 1890, a medical student came to me with the left inferior third molar badly impacted. It was a very severe case, his jaw being considerably swollen, and the inflammation so great that he could not open his mouth more than half an inch. I washed out the pocket as well as I could with peroxide of hydrogen and hot

water and treated it otherwise also. I thought it was doing as well as could be expected, but he was impatient for it to get well, so he had one of his professors lance the jaw on the outside, just below the ramus. This allowed the pus to discharge, but it also left a very ugly looking scar.

In March, 1891, I extracted seven anterior lower teeth for a gentleman eighty-six years of age. This is the oldest person I have ever done any extracting for.

May 27, 1891, I had the misfortune to break off a drill in each of the buccal roots of a left superior molar. I mentioned the fact to the patient, telling him it would be very difficult to remove them; he said to leave them alone, that he did not believe they would do any harm. As the canals were in a healthy condition, and the drills some distance up in them, I concluded to let them remain and see how the tooth would act. So I filled the remaining portions of the canals and filled the cavity with alloy. I have frequently seen the patient since and he always remarks that it is the best tooth he has in his head.

In September, 1891, I extracted for a lady patient several teeth, the roots of which were very long. On attempting to remove the left superior cuspid I broke it off about a quarter of an inch above the gum margin, it seeming to just fall apart, and the entire pulp fortunately came out with the part which broke off. Upon examination, I concluded that there was about half an inch of the tooth left in, and, as it seemed to have a bend in the root, I thought it best not to pain the lady by trying to gouge it out. After checking the flow of blood I succeeded in filling the canal with gutta-percha points. I suppose the root has never given any trouble, as the patient has not returned, except to have a plate made, although I asked her to let me know if she ever experienced any pain.

In January, 1893, a gentleman came to me suffering with a terrible pain between the left superior second and third molars. He insisted upon having the third molar out, although it was sound. Upon extraction I found that a small piece of wooden toothpick, which had been broken off between the teeth, had caused all the trouble.

January 1, 1894, I crowned the root of a right superior cuspid which was so badly broken down that I had to build it up with

amalgam. When I examined the root I found that it was decayed almost up to the process on the labial and anterior approximal aspects, besides being decayed up the canal and abscessed. After treating the root and getting the abscess healed, I inserted a post in the canal and built out the root just below the gum margin, then fitted the crown, and at last reports it was doing nicely.

In March, 1894, while doing some dental work for a young man, I observed that the right superior first molar was almost decayed away. I examined it and found that the anterior buccal root was separated from the other two. The pulp chamber was decayed through in two places. The only portion above the gum was a very small bit at the posterior buccal side. I requested the patient to allow me to experiment on the roots and see what I could do with them. After treating the roots and filling the canals, I put a post in the anterior buccal and palatine roots. With the assistance of these posts I built up an entire crown of amalgam upon the stump. I saw the gentleman recently and was told that the work was holding out well.

Since I commenced practice I have seen two lower molars with four root-canals.

CLEFT PALATE.—It is not necessary to wait till a child is one or two years old to operate for cleft palate. I do not hesitate to operate on a child of three to six months if it can have the proper attention.—*Broca*.

TUBERCULOSIS IN GERMANY.—The Imperial Health Officer at Berlin is reported as stating that he has found evidence of tuberculosis in the body of every third person between the ages of 15 and 60 years examined by him.—*Jour. Am. Med. Ass'n*.

ALUMINUM CROWNS.—Here is a question propounded to one of the American Journals. An aluminum crown being fitted to a root, was noticed to have a white, fluffy deposit upon it when removed from the mouth. The cusps were loaded with ordinary amalgam and the crown immediately cemented on with oxyphosphate of zinc. Patient complained of a sour, metallic taste. The same day he returned, the crown feeling and tasting very unpleasant. Upon entering the office he pressed the crown with his tongue, when it came off. He lifted it from his mouth, when it immediately became so hot that he could only hold it by letting it drop from one hand to the other rapidly. After a short time the heat subsided, when the crown was found to be riddled with holes. What was the chemical action? What caused it?—*Brit. Jour. Dent. Sc.*

Digests.

The Dental Review for April, 1896.

"THE ARTISTIC IN CROWN AND BRIDGE WORK," by L. A. Edwards, D. D. S., Chicago, read before the Odontographic Society of Chicago. A piece of work to be artistic must be perfect in all respects, judged not only from a mechanical standpoint, but from the effects produced upon the eye of an observer. A crown or piece of bridge work may be perfect mechanically, but still be very far from artistic. How many crowns do we see that could be made perfect by a slight change in the position of the facing, either by throwing the neck or cusp out or in a little, or by changing the position a hair either mesially or distally; their number is legion. Again how many of our dentists are color blind? Every day crowns are seen of a different shade from those of the natural teeth. What a pity, when with a little care and watchfulness the exact shade can be reproduced. How the looks of many mouths, otherwise good and perfect, are spoiled by the appearance of a facing just a little off color; it has changed during soldering, or the dentist has not been careful enough in picking out the shade, and he is either too busy or does not care, thinks it is near enough to the proper shade, or he may be color blind. Let us hope that it is the latter, for then he cannot be blamed so much, that is, of course, if he does not know that he cannot distinguish colors. We would not like to think that he let it go because he was careless, and supposes that it will never be noticed. It will be noticed, sooner or later some kind friend will say, "Why, your crowned tooth is not the same color as your own teeth. What dentist did it for you? Now, if you have any more work to be done you must go and see my dentist. He would not let a piece of work like that go out of his office." The result is, your patient loses confidence in you, and somebody who needs patients loses them, and somebody gains them. How many crowns do we see with a broad line of gold showing at the margin of the gums, where the band has not been properly cut out or contoured, and these margins have receded. It does not look very artistic. Now to be artistic,

work of this kind must be perfect from the beginning; the root must be properly prepared, and the band fitted perfectly; then a good foundation to begin upon has been secured. There are more failures from imperfectly fitting bands than from most any other cause. Another cause of failure is from the use of too soft a gold, for I do not believe that a durable crown or bridge, that will stand the wear and tear of mastication, can be made of twenty-four carat or soft twenty-two carat gold, although the claim has often been put forth that the soft gold was the best, as it was so much easier to adapt to the roots. The short experience that I have had proves to my mind that too soft a gold will not make a crown or bridge that will stand the immense strain that is put upon it during the process of mastication.

Now take into consideration the strain on the centrals and laterals from 60 to 100 pounds, cuspids from 85 to 125 pounds, bicuspid from 125 to 200 pounds, and sometimes more. Does any one imagine that soft gold will stand that strain? If he does he makes a mistake, and he may find it to be a rather costly one. A few months after putting on, a bridge will return, not the nice appearing one that has been put on, with the articulation correct, but a bridge that has sagged in the middle, and it will be found that the change, due to the force from mastication, has caused the abutments to incline toward each other, also that the bands do not fit at the gingival margin. In fact, after a few months' wear, it does not look artistic at all. The patient is not in love with it, and goes to some one else to see what can be done with it. Another point that is oftentimes neglected or overlooked in making a bridge, is that of cleanliness. There are very few permanent or stationary bridges that are self-cleansing, especially those that include the bicuspid and molars. Most of these are made with the neck of the facings or dummies resting on the outer side of the alveolar ridge, with the under surface concave, trusting to the tongue and a toothbrush, that you cannot get in there with, to keep the space free from all collections. I do not imagine that the smell or taste from them is very artistic. Now would it not be better if the underpart of the bridge were made flat and the surface continuous, with plenty of space between the bridge and the alveolar ridge, so the patient can take a toothpick and keep the surface clean in this way, not giving them a

chance to complain of the foul odor and taste that comes from it. I wish that I were enough of an artist with the crayon or chalk, to picture some of the inartistic and unmechanically constructed bridges that are put into people's mouths, but I am not. Now if a patient presented himself with a central incisor gone and wanted one bridged in, would it be satisfactory to us, if we wished to do the best for ourselves and our patient, if we took a facing, and soldered to each side a band that would slip over the incisal edge of the central and lateral, without paying any attention to the fit of the band at the neck of the teeth, and cemented it in place? I think not, but yet we see them. Here is a sample of a bridge made on that plan, except that this one is made to bridge the bicuspid space. This may be artistic, but I fail to see it, and I am sure the patient does not see it when he finds that he will have to lose at least one tooth. Of course he speaks well of the dentist who made it.

Another style of a small bridge that is used quite extensively, is a lateral incisor or bicuspid swung on to an open faced shell that fits over the cuspid; unless perfectly fitted the state of affairs will be something like this (drawing). When one depends upon the cement to hold crowns or bridges in place, he "builds upon the sands," for the cement will wash out, and "great will be the fall" of that crown or bridge. Another piece of artistic work oftentimes will be noticed in the mouths of respectable women, the incisors and cuspids of whom are replaced by glaring gold shells. When this work is being done, the women do not know that such things are characteristic of the women of the street, but sooner or later they will want to know if a change cannot be made, as they do not think so much gold in the front of the mouth looks very well. If sufficient care be taken with the work, sufficient consideration given to the strain upon the abutments, these end piers prepared carefully, the bands fitted perfectly, sufficient care taken in selecting the right shade of teeth, the proper occlusion and expression obtained, then with proper use of blowpipe and solder we may expect to have a piece of work that will be perfect mechanically, and also artistically, and I am sure, that if the patient takes a drink of ice water, that the difference between the temperature of the mouth, and the temperature of the draught will not "crack the china off."

The Dental Register for June, 1896.

"DENTAL CARIES DURING PREGNANCY," by H. F. Vandervoort, D. D. S., read before the Odontological Society of Cincinnati. It is generally accepted that the teeth of women are more liable to become carious during pregnancy, and while this condition has been much talked about I do not find anything recorded on the subject showing the relationship between dental caries and pregnancy. I have made no record myself of such cases, but have taken this subject for my paper that I may learn something of a condition or subject that should have our attention. As for dental caries, I believe the chemico-parasitic theory, of which Dr. Miller is the exponent, is generally upheld, at any rate he has shown positively that under certain conditions there is a ferment of a vital or living nature present in the human mouth, and this ferment has the power of self-reproduction. The product of this ferment is lactic acid, which deprives the teeth of their lime salts, and these micro-organisms can live and flourish in the interior of the decalcified mass of tooth structure. Now we all know how they begin business. They first, of course, find a suitable location, which is, in some fissure, or at some point not properly cleansed, where they secrete the acid, when the enamel is alternately decalcified, and the dentine reached which is soft, and then assisted by the dental tubuli, the interior of the tooth is very quickly reached. This is a brief description of the theory and shows that the influences are directed from the exterior, but in the case of pregnant females, I think the influences are directed from the exterior and interior both, and at the same time, it is said it is due to the neglect or a lack of attention at that time. That certainly has a great deal to do with it, but we find that the patients suffer from ocular trouble and numerous other nervous disorders, and while the condition generally excites a high nervous tension, or we might say, is very displeasing to the nervous system when the patient is easily excited and worried and is troubled with nausea. Now we find a change in the oral secretions which furnishes a more suitable soil for the development of micro-organisms, and from lack of attention, such as proper cleansing and use of a suitable mouth-wash, the organisms have nothing to interfere with their progress of destruction, and from the nervous condition nature is weakened and is unable to protect the organs from

within. It is thought by some that through the demands of the developing fetus the lime salts are abstracted from the teeth; this, however, I do not believe, for my knowledge of the histology of teeth does not show any place of absorbing the lime salts from them or how carried from the teeth to the fetus. It may be done, yet since the teeth receive nutrition from the blood it would seem that nature was cruel indeed to cease giving nutrition and even rob them of so important a part. It is also thought that if the teeth were deprived of nutrition other bones would suffer too, has it been proven they do not? I think, probably, they do, but on account of the predisposition of the teeth to caries they suffer most. Now, to conclude, I will say the family physician generally knows of the condition first, and I have avoided mention of treatment, for generally when we are called on, we only have to treat acute conditions and the treatment would be governed by the case in hand.

Items of Interest for June, 1896.

"A REMARKABLE CASE OF NECROSIS," by W. W. Rowe, D. D. S., Greensboro, N. C. In April, 1892, Mrs. M— came to my office with the left upper central incisor badly abscessed and very loose; the left second bicuspid was also abscessed, and intervening teeth loose; the gums were purple and swollen, and the breath fetid. This condition was caused by a sleeping child throwing up its arm and striking the mother a violent blow on the mouth, loosening the teeth and causing the gums to bleed profusely around the necks of the teeth; the soreness, however, passed away in a day or two, and there was no further trouble till it became evident that the central incisor and second bicuspid were abscessing.

I decided to first extract the central incisor, and an abscess as large as a pea rolled out of the cavity, followed by a protrusion of bone, which I removed with a pair of pliers, and it proved to be a thin piece of necrosed alveolus about three-fourths of an inch in length. Further exploration revealed numerous other pieces of necrosed process and bone. A curved explorer could be passed through a pus channel over the lateral, cuspid, and first bicuspid to the abscessed second bicuspid, which I next removed, and pumped phenol-sodique, full strength, through the artificial opening. I dismissed the patient, feeling satisfied that at the next

sitting the three other teeth involved would have to be extracted.

The patient returned in a week, several pieces of necrosed bone had worked through the pus channel and down through the sockets where the teeth had been removed. She had used faithfully an antiseptic mouth wash I had prescribed. Examining, I found the gums had assumed a healthier condition, but the lateral cuspid and first bicuspid were detached from the process posteriorly, but the three teeth were firmly united in a solid block to a thin plate of the anterior process, so that by taking a lancet and splitting the membrane back of the teeth they could have been removed simultaneously in a solid block. Taking hold of the three teeth and rocking them gently, the sharp edges of bone could be felt to crepitate.

A consulting physician told the patient that she would have to "go North and be treated by a specialist for necrosis of the superior maxilla." I determined in the meantime to give all the palliative treatment I could, and first detaching all the necrosed bone I could reach, I pumped peroxid of hydrogen freely and liberally through the pus channel, giving same treatment at each sitting and gradually getting rid of all necrosed bone. Finding the treatment creating so marked an improvement and the drainage so perfect, I dissuaded my patient from having an operation performed, feeling assured that I could effect a cure. The treatment was the usual one, and there is nothing remarkable to record about that—but the result, I think, is almost without a parallel. Eight weeks ago, and four years from the time the accident occurred, an impression was taken. Wonder of wonders! The lateral, cuspid and bicuspid have moved in solid phalanx and joined company with the right central incisor, and are as immovable as if they had originally grown there, the gums are solid, rosy-hued and healthy, and the teeth show no signs of dead pulp.

British Journal of Dental Science for June, 1896.

"ORAL SURGERY," by Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S. Eng. Syphilitic Affections of the Mouth. The mouth may be affected in all three stages of syphilis. Primary syphilitic sores are by no means rare upon the lips. They have also been observed upon the tongue, on the tonsil and on the gum. These erratic chancres are usually circular and dis-

tinctly elevated above the surrounding mucous membrane, and are often indurated; the neighboring lymphatic glands are much enlarged and very hard, often forming a mass of considerable size in which the shape of the individual glands can be readily made out. Primary chancres in unusual situations often assume extraordinary characters, which are so diverse as to admit of no terse description. In such cases the correct diagnosis is apt to be missed, unless the possibility of syphilis is suggested; it is therefore a good rule in practice to suspect that any sore of peculiar appearance, and which defies diagnosis, may be a primary chancre; the diagnosis can then be easily confirmed by the co-existence or subsequent appearance of signs of secondary syphilis.

In secondary syphilis the most important lesions are the mucous tubercles or plaques and the ulcers to which they give rise. The favorite seats of mucous patches are the lips, angles of the mouth and edges of the tongue; they are also seen on the cheeks, gums, and hard and soft palate. The appearance of mucous patches varies considerably, and depends upon the amount of irritation or damage to which they are subjected by the teeth, etc. They are best seen in their unaltered condition on the dorsum of the tongue near the circumvallate papillæ or on the under surface of the tip. A typical mucous patch is round or oval in shape, of a greyish white color, and raised above the level of the surrounding parts; its border is sharply defined and usually somewhat sinuous or wavy. The surrounding mucous membrane presents a perfectly natural appearance. The surface of the patch may be quite smooth or it may be intersected by cracks or fissures; sometimes it may assume a warty or cauliflower-like appearance. In situations where the patches are exposed to injury (for instance, on the edges of the tongue and the inside of the cheek near the teeth) the appearances differ greatly from those just described. The outline of the patch, whilst roughly retaining its oval form, becomes much more sinuous and is surrounded by a red areola about an eighth of an inch in breadth. The surface of the patch becomes ulcerated and grooved, or marked by alternate red and white lines. The entire tubercle is not usually destroyed, but the central part breaks down, producing a sinuous ulcer surrounded by a pearly-white rounded smooth border. If the patient be in bad health, and if the irritation be continued, the ulcer may ex-

tend and assume formidable dimensions. Mucous patches and ulcers may remain unaltered for a considerable time unless efficiently treated, but they sometimes disappear spontaneously. They are usually sensitive and give rise to pain in eating, speaking, or smoking; there may be slight salivation, but an offensive odor is very seldom noticed.

In the tertiary stage of syphilis gummata may develop in various parts of the mouth; they are rare in the mucous membrane of the cheeks, and are hardly ever seen in the floor of the mouth, but they are fairly common on the hard palate, where they are particularly prone to break down into round or oval ulcers involving the bone, and leading to perforation (see Syphilitic Necrosis). Gummata are more often met with in the tongue than in any other part of the mouth; they may occur in the mucous membrane or in the muscular substance. When occurring in the former situation they are usually small and multiple, being about the size of a small shot or pea, and feeling hard to the touch and somewhat ill-defined in contour; the epithelium over them may be natural, or if they are very superficial, may be smooth, owing to the papillæ getting rubbed off. So long as they are not irritated they are painless and apt to escape notice, but when irritated they inflame and break down, leaving small superficial ulcers. When numerous these ulcers may cover a large portion of the surface of the tongue, giving it a fissured and furrowed appearance; they are very chronic, especially when inadequately treated. When they heal they pucker the surface of the tongue, causing great disfigurement.

The deep or parenchymatous gummata may occur in any part of the muscular substance of the tongue, but are nearly always found on the dorsum, especially near the centre. They may be quite small, or as large as a walnut. They produce rounded or oval tumors not very well defined, very indolent, and causing little or no pain. As they mature they approach the surface and soften; the mucous membrane over them becomes smooth and red, and eventually perforated by a small circular aperture which quickly enlarges by melting away of its edges until a deep cavity with ragged sloughy sides is exposed. The size of the ulcer is only fully appreciated when its sides are separated by the finger.

The *treatment* of syphilitic affections of the mouth necessitates the administration of internal remedies suitable to the stage at which the disease has arrived. In primary and early secondary syphilis a course of mercury must be prescribed; one of the most satisfactory preparations is the hydrarg. cum creta in doses of $2\frac{1}{2}$ grains three times a day. In cases of late secondary or early tertiary syphilis the administration of mercury must depend upon the severity of the disease, the presence or absence of syphilitic manifestations in other parts of the body, and the amount of mercury the patient has already taken in the earlier stages. In tertiary affections iodide of potassium is essential. It should be given at first in doses of 5 grains thrice daily, the amount being gradually increased up to 30 grains three times a day, or until the desired effect is produced. In early tertiary syphilis, especially when there is doubt as to the previous administration of mercury, this drug may be advantageously combined with the iodide.

Local treatment is of more importance and attended with greater success in secondary than in tertiary affections. Mucous patches and ulcers should be painted three or four times a day with a camels-hair brush dipped in a solution of ten grains of chromic acid to one ounce of water. Under this treatment they usually disappear in a week or ten days. Various local remedies may be used for tertiary ulcers, but it is not possible to predict which one will prove most useful; each must be tried until the most suitable is discovered. The following are those in common use:—nitrate of silver, alum, sulphate of copper, bichloride of mercury, honey and borax, chlorate of potassium, tannic acid, and Mandl's solution (Pot. Iod. grs. 30, iodine pur. grs. 5, acid carbol. grs. 5, glycerine ounce).

It is important that all sources of irritation should be removed as far as possible. The food should be plain and unirritating, smoking should be given up, and alcohol used but sparingly and well diluted. The condition of the teeth should be carefully attended to, and the wearing of artificial dentures suspended.

Lastly, it is of great importance to remember that primary and secondary affections of the mouth are highly contagious. Many cases are on record of syphilis conveyed from person to person either by direct contact or indirectly by means of instru-

ments, drinking vessels, etc.; dentists have acquired syphilis by scratching the finger on the teeth of persons suffering from the disease. It is therefore very important that patients should be cautioned as to the risk of infecting others, and that dentists and others operating on the mouths of infected persons should be scrupulously careful in disinfecting their hands and instruments.

Tubercular Affections of the Mouth.—Tubercular disease of the mouth is comparatively very rare. It may affect the tongue, the cheeks, or the hard and soft palate. The tongue is the part most frequently, and often exclusively, affected. The disease may be *primary* or *secondary*. Primary tubercular ulcers of the tongue are very rare indeed, but ulcerations secondary to tubercular affections of the lungs and larynx are much more common. Tubercular ulcers of the tongue may commence by the breaking of a small vesicle, by the formation of a small yellow point or patch, or in an abrasion caused by rubbing of the teeth. They may occur on any part of the tongue, but are most often seen on the tip and borders. The fully developed ulcer has no characteristic shape; it is usually roughly oval with sinuous borders, uneven pale granulated surface covered with a dirty yellow viscid mucus, and sharply cut or bevelled edges. The ulcer is sometimes surrounded by a number of very small greyish-yellow points, or elevations, or, if they have broken down, minute ulcers.

The ulcer is at first not very painful, but as the disease advances it becomes more and more painful and sensitive to touch. Salivation is well marked in the later stages. As time goes on the sore increases, and the patient's strength fails. Sloughing may occur. The glands under the jaw are often, but not always, enlarged. The natural termination of the disease is death from exhaustion and pulmonary disease. Occasionally a tubercular ulcer heals, at any rate temporarily.

Treatment.—Primary tubercular ulcers should be excised whilst they are still small, and if possible before they have infected surrounding parts. In such cases there is a possibility of a permanently good result. Even in secondary tubercular ulcer excision may be practiced, if it is of small size and the patient in sufficiently good condition to stand the operation. In such cases the operation is advised, not with a view to cure, but to save the great suffering which the ulcer itself causes. The cautery is some-

times used for the removal of these ulcers, but it has no advantage over the use of scissors.

In cases unsuitable for operation great care should be taken to remove all sources of irritation, and mastication must be rendered as easy as possible by due selection and preparation of the food. It is sometimes even necessary to resort to the use of nutrient enemata, owing to extreme pain in taking food by the mouth. All local applications should be non-irritating. Most benefit will result from the use of cocaine painted on the surface of the ulcer, or of a powder composed of iodoform (gr. i.), borax (gr. iii.), and morphia (gr. 1-6), blown upon its surface after cleansing with absorbent cotton wool. The constitutional treatment resembles that of other tubercular affections.

"REPORT ON A CASE OF RE-UNITED FRACTURED HUMAN TOOTH, WITH SOME REMARKS ON THE HEALING OF WOUNDS OF THE DENTAL PULP," by Mr. Storer Bennett. In December, 1888, Mr. W. E. Harding presented to this Society an upper incisor, which had been fractured across the crown, and which he had abstracted from the mouth of a girl 17 years of age, only three or four days before he presented it. The history of the patient was that some ten months previously she had fallen down, striking the tooth and driving it high up into its socket. It became impacted and remained fixed in its position, causing more and more irritation up to the time that Mr. Harding saw it. The pain gradually became so intense that there was nothing to do but to remove the tooth. He then discovered that it had been fractured across the crown, in a direction obliquely upwards and backwards. I was asked to make a microscopic examination of the specimen, and, therefore, removed a vertical section from front to back of the tooth, and the slide now exhibited shows the two outer halves remaining. It was seen that the broken portions of the specimen, though separated by a considerable interval, were firmly knit together by some calcified material which occupied the central portion of the gap. The margins of the space, however, being occupied by a substance of leathery consistence, were not calcified at all. Examined microscopically, the uniting substance was seen to consist of a calcified material of a spongy or cavernous character, with numerous spaces for blood vessels. The cavernous

spaces had apparently been occupied by a substance somewhat resembling pulp, though I do not wish to affirm that it was pulp. In various positions slight absorption of the edges of the normal dentine has taken place, the spaces thus formed being filled up by cementum showing well-marked lacunæ and canaliculi. The amount of cementum, however, is not very great.

The next slide is a magnification showing the intermediate tissue. Spaces are seen which have been occupied by blood vessels, and from the black masses little tubes here and there may be seen passing, but there is no space where one can make out a distinct brush of tubes going off, as one would expect if a mass of dentine were present.

The next slide shows a smaller portion of the same thing more highly magnified, but I do not know that it adds any greater amount of clearness to the idea of the specimen. An examination of the specimen suggests to one's mind two different sources for the supply of this new material, either pulp or periosteum. The pulp was exposed, but only to a very slight extent, and, of course, it is possible to imagine that enlargement took place, that the overgrowth of the pulp filled up the space between the two fragments somewhat similarly to the way that chronic enlargement occurs in cases of polypus of the pulp, and that ultimately this calcified.

On the other hand, we have evidence that there is cementum in the section, lacunæ and canaliculi being present in certain parts in rather large numbers, and we have *not* the evidence of any definite dentine structure asserting itself. We know that bone may be produced from many tissues other than those which naturally give rise to it. We have here, I think, a case in which hæmorrhage having taken place, a natural capping of the exposed pulp occurred, somewhat similarly to the way a wound heals under a scab. Blood was poured out between the fragments, organization took place, numerous blood vessels were produced, and ultimately calcification occurred, and eventually, if it had been left long enough, I think the whole of the space would have been filled up with calcified material more or less resembling bone, or bone and cementum together. There are many specimens described where cementum has united a fractured tooth in the root, but I think we have here to do with a specimen unlike

any other that has been figured or described, in so far as the cementum has been deposited between the fractured portions of the crown. I regret the report has been so long delayed. I ought to have presented it years ago, but perhaps there is one fortunate circumstance connected with it, and that is that Mr. Tomes has come across a fractured tooth which will compare with this, and no doubt we shall listen to some very interesting remarks from Mr. Tomes in the comparison of his own specimen with this one.

Journal of British Dental Association for June, 1896.

"PORCELAIN CROWN WITH A GOLD CAP," by Mr. T. H. Elliott, L.D.S., Glasgow, read before the Southern Counties Branch, at Brighton, April 18, 1896. The time consumed for this operation was about an hour and a half. The tooth, a right upper lateral incisor, was cut down almost level with the gum, trimmed, and the circumference ascertained by means of silver suture wire twisted round the root. A narrow strip of gold was bent round and soldered to form a band, carefully fitted to the root and cut down very narrow in front, being well pressed up under the gum. It was then removed, and a top of slightly thinner gold soldered to it to form a cap. The root canal having been enlarged with a pin-sized drill, the cap was replaced in position and burnished over root, thus indicating position of canal as a guide for the drill in piercing the gold to receive the pin. The pin, a piece of tube pin wire, was fitted in the root to the required length, marked with an instrument at its junction with the gold, and then withdrawn; the cap was next removed, and the pin waxed to it, the length indicated by mark and soldered.

The perpendicular of the pin is not of so much importance at this stage, as, the gold top being comparatively soft, it will assume the right direction when forced into position.

The surface of the root being finally trimmed level with the gum, the cap was placed into position by grasping with pliers that portion of the pin which projected from outside the cap and pressing well home.

A plaster impression was taken with the cap *in situ*, removed, and the cap placed into position in the impresssion. This was cast, a little colored soap lather being used to prevent adhesion, and when set, taken off by removing small pieces of the plaster,

until the colored portion was exposed. The cap now occupied the exact position on the plaster model as it did in the mouth, and was not removed until the crown was finished, the tooth being backed, fitted, and soldered, on the model, the latter being nearly all cut away except the two teeth adjoining the artificial one; a little plaster was run over the latter, and the two plaster teeth dried, heated up, and soldered in the usual way.

"SOME POINTS IN CONNECTION WITH THE BACTERIA OF THE MOUTH," by Dr. Washbourn, (paper prepared by himself and Mr. Goadby), read before the Odontological Society of Great Britain, June 1, 1896. They stated that they had been especially interested in the relation of the streptococci found in the mouth to those occurring in septicæmic conditions in the human subject, and had made a number of observations in that connection. Continuing, they said:—

In the course of our investigations we have examined the mouths of a large number of healthy and sick individuals, so that we have attained a fairly extensive practical knowledge of the bacteria of the mouth.

The importance of diminishing the number of bacteria in the mouth is due to the undoubted fact that caries is caused by their agency. It is well known that caries occurs most frequently in those who neglect their teeth. There are no doubt other causes which favour the production of caries, such as an imperfect development of the teeth, a deficient calcification, and so on; but these are only predisposing causes, and without the agency of bacteria caries does not occur.

After referring to the various species of bacteria usually met with in the mouth, they remarked:—We have isolated a bacillus which agrees in its microscopical appearances with that described by Miller as the *leptothrix buccalis maxima*, and which differs from the *bacillus buccalis maxima* in not staining with iodine and lactic acid.

There is abundant proof that bacteria pathogenic to the human subject are frequently found in the mouth of healthy individuals. The *diplococcus of pneumonia* has been found in a large number of the cases in which it has been searched for. The best method of isolating it is to inoculate mice with saliva and to

make cultivations from the blood after death. This micro-organism is the cause of acute lobar pneumonia and of some forms of pleurisy, cerebro-spinal meningitis, otitis, and other diseases in the human subject.

The *diphtheria bacillus* has also been found in certain cases. On several occasions one of the authors has found virulent diphtheria bacilli in the mouths of perfectly healthy individuals, or in patients convalescent from scarlet fever and with no symptoms of diphtheria. In one case it was present several weeks in the mouth of a healthy individual. The virulence was tested upon an animal and found to be high.

Among the pathogenic bacteria that have been found from time to time in the mouths of healthy individuals, we may mention the *streptococcus pyogenes aureus*, and the *streptococcus pyogenes*.

The occurrence of pathogenic bacteria in the mouth is of great interest. It throws light upon the spread of disease, and shows how an apparently healthy individual may convey disease to another. It, moreover, shows how carefully dental instruments should be disinfected after use. But apart from these practical considerations there is the theoretical question—how a virulent bacterium can remain in the mouth without producing disease. This is, without doubt, due to the individual being immune. A bacterium only becomes pathogenic when it is virulent in relation to the susceptibility of the individual. The same bacterium may be harmless to one individual and yet produce disease in another.

With regard to the question of the presence of pathogenic streptococci in the mouth, the evidence is conflicting; some observers state that pathogenic streptococci are frequently present, others say they are seldom present; while a third series of observers maintain that a streptococcus is commonly found in the mouth which is non-pathogenic, and which is a different species to the pathogenic streptococcus.

We have made a number of observations in this direction. On making microscopical examinations from various regions of the mouth, we have been struck with the frequent presence of masses of cocci. They are generally to be found on the tonsils and gum margin, and invariably on the mucous membrane of the buccal

sulcus; we have found them present in the mouths of eighteen healthy individuals we have examined. These cocci are often found lying upon squamous epithelial cells; as a rule the cocci are arranged in the form of diplococci, but sometimes short chains are to be seen. The individual cocci may be elongated, giving them the appearance of short bacilli. Now by making cultivations from the buccal sulcus, where these cocci are always present, we have invariably obtained cultivations of streptococci, which we have no doubt are the same as those seen in the microscopical preparations; that the cocci are arranged chiefly in pairs in the mouth and chains in the cultivations is quite consistent with what we know of the morphology of streptococci.

The method we have adopted is the following: a little of the scraping of the mucous membrane was removed with a platinum wire, and both tubes were incubated at 31° C. for twenty-four hours; at the end of this time the broth examined microscopically showed a growth consisting of diplococci, streptococci, and other bacteria; from the broth streak cultures were made on agar. Sometimes the resulting growth was a pure cultivation of streptococci, but generally other colonies also appeared; among these the most frequent were large colonies of *sarcinæ*, especially in those cases in which a large amount of caries existed. Having obtained the cultivation on agar, pure cultivations could easily be obtained by inoculating a third series of agar tubes.

We have examined 24 mouths in all, 16 with perfectly sound teeth, and 8 with one or more carious teeth, and in every case streptococci were obtained in the cultivations. These observations show quite conclusively that streptococci are invariably present in the mouths of healthy individuals; they also show what care must be taken in coming to conclusions as to the significance of streptococci found in the mouth in disease. Many observers, in making bacteriological examinations of the exudation in diphtheria, lay great stress upon the presence of streptococci in addition to the diphtheria bacillus in the cultivation tubes, and they state that when many streptococci develop in the cultures the case is more severe than when the diphtheria bacillus only is present.

An exceedingly important question arises with regard to the relation of the streptococci found in the normal mouth to the

streptococcus which is the cause of disease in the human subject. Is the streptococcus in the normal mouth a harmless saphrophyte, which is only related to the streptococcus of disease by certain similarities, just as the hay bacillus resembles the anthrax bacillus? Or are the micro-organisms varieties of the same species, which are capable under appropriate conditions of being mutually convertible? Can the normal streptococci of the mouth invade the body and produce disease under circumstances which lower the resistance of the body?

We have already alluded to the occasional presence of virulent diphtheria in the mouth, and there is no doubt that virulent streptococci are also at times present. Several observers have undoubtedly found virulent streptococci in the mouths of healthy individuals, but this does not prove that the streptococci constantly present in the mouth are of this nature.

Our own observations have led us to incline to the view of Lingelsheim, that the normal streptococcus of the mouth is a different species to that producing disease.

Now to understand the difficulties in distinguishing the normal streptococcus of the mouth from that of disease, we must say something of the varieties of streptococci found in various diseases in the human subject.

Having dealt at some length on this point, they remarked: "The streptococcus from the normal mouth differs from the streptococcus longus in the following points: (1) It is non-pathogenic when tested upon rabbits and mice. (2) It produces a uniform turbidity in broth cultivations. (3) It clots milk and produces much more acid than the streptococcus longus. (4) The individual cocci are smaller, and the chains, especially in broth cultivations, shorter. The length of the chains is not always a reliable criterion. Sometimes in the impure cultivation obtained from the mouth the chains are very long, and this is probably due to the medium being altered in composition by the other bacteria present.

The conclusions which we draw are these:—The streptococcus, if occurring normally in the mouth, agrees with the streptococcus brevis of Fingelstein, and can be distinguished from the streptococcus of disease by its biological and morphological characters. It must be looked upon as a distinct species for the present,

although ultimately this view may be proved incorrect, for it is possible that further researches may enable the streptococcus brevis to be converted into the streptococcus longus. This, however, has hitherto not been accomplished.

We think that the discrepancies of different observers who have investigated the streptococci of the mouth are partially due to the fact that the streptococcus longus is sometimes accidentally present and has been mistaken for the normal streptococcus of the mouth.

The Milwaukee Medical Journal for May, 1896.

"DOCTORS AND DENTISTS," by Dr. G. V. I. Brown, Duluth, Minn., Reply to Toast, Banquet of Milwaukee Medical College, April 24, 1896. Mr. Toastmaster and Gentlemen: When a young man graduated in olden times as a magician, he was required for a final test, to run through a long, dark hallway, pursued by the devil. If he escaped without being caught, all was well with him.

Now I used to be something of a sprinter, but evidently am not speedy enough to outrun Mephistopheles, for, you see, I am caught and am a victim at your service. My condition is very like the native of that Emerald Isle, the birthplace of all truly good New York and Chicago police, who, after many years residence in this country, having waxed fat and prosperous upon well-administered city contracts, went back to the land of his birth for a visit, and upon his return to this country told of a great joke he played upon the Hibernians. He said: "Won day Oi disguised meself and wint to Kilkinny fair, and, would ye balave it, the divil a wan of thim all could tell Oi was an American." That just exactly fits my case, for, though not disguised, I am sure "the devil a one of yous" could tell whether I am a doctor or a dentist; but, whatever I am, there is one thing of which there can be no mistake: My heart, soul and mind are bent upon the drawing of dentists and physicians together in the communion of their daily practices.

Alive to the necessity of more frequent consultation, for years I have tried to spur the dentists in their gatherings and wherever possible, and now, having, as I hope, earned the right of common fellowship, I hope to bear some influence among the medical men.

They are all wonderful diagnosticians down here in Milwaukee, and when notified that the toast "Doctors and Dentists" had been assigned me, at once it became evident that my malady had been correctly diagnosed, but I felt quite sure no one understood the severity of the attack. It seems to be in a measure incumbent upon me, although a very young member of the medical fraternity, at this, my christening, to criticise some of the fallacies of the medical teaching, and as one can always talk with more confidence and freedom of the thing he knows least about, antitoxin seems, perhaps, of all topics, the most suitable for me in this respect. I read with interest the other day an article in the *Contemporary Review*, in which the writer discusses "Anti-toxin from a Patient's Standpoint," he having been treated for diphtheria in one of the hospitals, where antitoxin was used upon him in a fearful and wonderful manner. He cautions against its general adoption into practice in no unmeasured terms, saying: "The after-effects of the anti-toxin in his case, and that of others, was much more serious than the original disease. "After his so-called recovery and discharge as cured, the bacteriologist being no longer able to discover the much-dreaded bacillus, he was taken with a temporary blindness, dizziness in his head, causing him to stagger and almost fall, helplessness of his lower limbs, and a disinclination to move, amounting almost to paralysis. Though the writer refers later on to the broken-down cab horses as a medium for the production of serum, evidently, not being a horseman, it did not occur to his mind to account for the symptoms, as I, with quickness, acquired doubtless through my association with your honorable hosts and a horse experience of freer, if not happier, years, was able to do; I saw at once he had simply acquired the marked characteristics of this particular cab horse. What is more natural in cab horses than dimness of vision, head staggers and a weakness of the hind legs, to which add the natural disinclination to move, and the picture is complete. Doubtless a later report in this case will show the spavins beginning to develop, and we will find him neighing for oats. But I carried the idea still further, and wondered if, after all, antitoxin might not, like many newly advocated remedies, prove to have been used long years ago; that, if this could be proven to be true, and if donkeys had been used instead of horses, what an interesting problem of sociology it would be to thus trace out and

account for many peculiarities noticeable among our acquaintances.

There is a feeling among dentists akin perhaps to that which prompted the all-ambitious Cicero, who, when his friends said to him at the beginning of his career that the name (Cicero), which meant only a vegetable, was not sufficiently high-sounding for one with such great aspirations, and advised that he change it for one more suitable, replied, "I will keep my father's name, and will make it honorable;" and when later we find Cicero writing to the historian, asking him to give even more credit than perhaps he might think he was entitled to, we realize how heavily must have weighed the value of his name against all-powerful ambition. This in a measure voices the feeling of the dentists of to-day, who cling to the old name in preference to being called oral surgeons, surgeon dentists, etc. Doubtless this is why but a handful, comparatively, of the dentists who are doctors of medicine as well as doctors of dentistry attend the Odontological Section of the American Medical Association, a far greater number going in preference to the individual organization, the American Dental Association. Yet one of the most important steps of modern advancement in both professions was the establishment of this same section and the recognition by membership in the American Medical Association of all that portion of the dental profession who are entitled by reason of the possession of the medical degree, due directly to the efforts of the late Dr. Allport and Dr. Talbot, of Chicago, with their friends.

Many feel that overtures were not treated in the proper spirit by the physicians of the past, and that now, when advancement has perhaps been more rapid in dentistry than in any other special branch of medicine, they refused to be patronized or adopted.

Narrow-mindedness upon the one hand has begotten narrow-mindedness on the other, and, by one who would judge fairly, must be admitted on both sides; yet in my intermediate position I feel sure great forces are at work to break away even the last remnant of such prejudices. The education of dental and medical students together in the same institution is the great factor hopeful for the future in this respect. More of the medical teaching will make the dentist more familiar with the proper technical

expressions, more cognizant of the general undersanding of the medical practitioner; in short, more ready and fit for profitable consultation. On the other hand, the medical student thus educated will have a greater respect for the knowledge of his dental confere, but more than all is the power of association, the formation of friendships, the influence of his associates, for it is generally agreed that students are educated as much by each other as by the professors.

Here's to the Doctor, whose helping hand
Is the first to greet as we enter the land,
And courteous always, as ever brave,
He bids us adieu at brink of the grave;
And all the days through all the years,
He soothes the sufferer, calms his fears;
In sickness, in sorrow, in storm and cold,
His deeds of mercy are yet half told.

And here's to his brother, the second son,
The surgeon knight, the mighty one;
For lords and nobles of high degree
Are all quite well in their way, you see,
But he who, by reason of subtle skill,
Can grapple with death, defy his will;
Who daily prolongs the span of life
By the skillful use of aseptic knife,
Has reached the summit, the topmost stone,
Above all the world he stands alone.

And here's again to still another,
The babe in arms, the little brother;
But mark him well—the infant still
Has yet his mission to fulfil.
A charge has he. Some all-wise fate
Has made him the captain of the gate,
To guard and keep with watchful care,
To challenge all who enter there.
At gates of Rome a thousand men
Were stopped by three, and so again
The enemy hosts of human kind
A worthy foe must surely find,
The artist, mechanic, artisan child,
The Doctor of Dentistry once reviled,
But like the stone the builders passed,
To become the corner-stone at last.

Journal of American Medical Association for May, 1896.

"CONCERNING MEDICAL LANGUAGE," by George M. Gould, A. M., M. D., Philadelphia, read at American Medical Editors Association, at Atlanta, Ga., May, 1896. The writer, after pleading long and earnestly for the gradual adoption of a simpler method of spelling, showing that it must come in time, says: Specifically, the microscopic modifications I have urged here are as follows:

1. Abolish in English words the archaic, unnecessary, bothersome *æ* and *œ*, supplanting it by *e*.

2. Cease adding the tautologic *-al* to adjectives having already one adjectival suffix, *-ic*. It is already done in thousands of words; finish the job.

3. Drop the useless hyphen in words whose parts are derived from classic languages. In ten thousand words you have already done so; finish with the rest. But retain the hyphen in such compound terms as express a single idea by two semifused English words, especially when both are nouns. E. g. say *antitoxin* (not *anti-toxin*), *culdesac* (not *cul-de-sac*), *postmortem* (not *post-mortem*), *ventrofixation* (not *ventro-fixation*), etc. Keep the hyphen, because it is necessary to avoid confusion and doubtfulness of meaning, in *curet-spoon*, *heart-murmur*, *skin-disease*, *sleeping-sickness*, etc.

4. Drop the useless *-te* from *curet*, *brunet*, *fourchet*, *etiquet*, *cigaret*, etc. You have already lopped it off from *cutlet*, *doublet*, *quartet*, *quintet*, *sextet*, *septet*, *racket*, *minuet*, *fillet*, *corset*, *stylet*, *tourniquet*, *bouquet*, etc. Finish the job.

In the same way cut off the useless *-me* from many words, writing *program*, *gram*, *centigram*, etc., just as already we do *telegram*, *anagram*, *diagram*, *epigram*; let's make an end of it.

5. Use figures instead of spelling out numbers, at least those above ten.

6. Anglicize foreign terms when a goodly proportion of your readers will not understand them in the originals. Use italics as little as possible; use as few foreign words and terms as possible, because the vast majority of your audience can not understand them (even if *you* do); and because there is a deal of silly conceit in airing exotics of speech.

7. As to the spelling of chemic terms, accept the recommendations of the American Association for the Advancement

of Science, which after years of dispassionate investigation advised that we drop the final *e* in *bromid*, *iodid*, etc., and in *bromin*, *iodin*, *atropin*, *quinin*, etc. Say *phenol* instead of *carbolic acid*, *glycercol* instead of *glycerin*, etc.

8. Abolish all diereses and accents. They can not teach pronunciation, and they are useless luggage. Let us write *oophorectomy*, *cooperation*, *ptomain*, *leukomain*, etc., without the diereses. When a foreign word is Anglicized let us do it completely, and not drag over into our domain the exotics of foreign habit, leaving it, *e. g.*, neither English nor French. Leave to the poets the acute, the grave, and the circumflex accents, that are foreign to the spirit of our own tongue.

9. Do not bother about hybrid terms. A mule is a better animal than either its father or its mother. It is only finicky sticklers that are horrified by hybrid words. There are many, many thousands of them in our language, good words too, that have been used for centuries, and that always will be used. There is no earthly objection to them,—and indeed, we should rather welcome them if they are good words, expressive and short. More than any other language ours is adapted to receive them and use them, and there are more of them in it than in any other language. Instead of being ashamed of the fact we should be proud of it, as it shows our receptivity and plasticity. If we are bound to have the defects of our virtues, let us not be ashamed of the virtues of our defects.

Finally, I would beg that you carefully consider the source and secret reasons that exist for opposition to the foregoing recommendations. Ignorance, colossal, imperturbable, impertinent ignorance is characteristic of much of it. Read, for example, the letters in the *British Medical Journal* from correspondents (not editorial utterances, because the editors know better, and have publicly advised dropping the *æ* and *α*), and you will see these objectors haven't studied philology five minutes in their lives, and are living in an antediluvian world.

But, again, consider the source, I beg of you, and you will very often find that it is the secret influence of the commercial medical publisher that is at work. He publishes a dictionary committed to the old ways, and hence prints his medical journals and books in the archaic language of his dictionary. It means expense

and loss of money to him in very many ways to have his "authorities" supplanted.

The Ohio Dental Journal for June, 1896.

"PORCELAIN INLAY GROUND TO FIT A CAVITY IN A TOOTH," by A. W. Harlan, M.D., D.D.S., Chicago; read before Mississippi Valley Dental Society, April, 1896. I would not presume to call your attention to such a trivial subject if the whole question of inlays had not occupied such a large place in discussions before societies during the past six or seven years. Rubber inlays, platinum inlays, gold inlays, glass inlays, and baked porcelain inlays, with perhaps some others have had their advocates and do now I suppose in different quarters. The ground porcelain inlay, however, in labial cavities, buccal cavities, and some crown cavities, to my mind furnishes us with something more artistic than any of the other methods of making or setting inlays. It is not a necessity to laboriously grind an inlay to fit the cavity in the tooth; this may be done with much greater expedition by preparing the cavity, taking an impression of it in plaster or modelling composition and getting a cast of the cavity in copper-amalgam, or Melotte's metal.

The inlay can be ground to fit the cavity to a hair's breadth, with diamond disks; undercuts and grooves may be made to provide for the flowing of the cement to retain the inlay in position. A tooth or bit of porcelain must be selected at least one shade darker than the moist natural tooth. If a porcelain rod is used it must be capable of retaining a high polish, or the difference in color will be too manifest. The edges of the inlay must not be bevelled too much or the cement will show through them. The oxyphosphates are to be preferred for setting inlays in anterior teeth; gutta-percha or sulphur may be used for crown or buccal cavities in bicuspid or molars, or in pulpless teeth. The objection to gutta-percha is its color and the tendency to deterioration in such a small space as exists between an inlay and a cavity wall.

Canada balsam may be used, but it generally requires too much time and it is liable to become yellow from the secretions of the mouth. Nothing is more artistic than a section of a gum tooth with the gum attached to replace a waste spot on the neck of a superior cuspid or superior incisor.

A gold filling always looks badly, and the thermal changes are so pronounced that the patient suffers every time the mouth is opened or a drink of water is taken, so that there can be no comparison as to the comfort of such an operation.

To more securely fix the labial inlays a small filling can be built over the edge of the inlay next the gum margins. This is done by grinding from the face of the inlay a depression of such shape that the gold can be adapted to the surface without disturbing the setting of the cement. Before setting an inlay with oxyphosphate, the cavity must be dried with ammonia fortior, and then with alcohol, and the inlay should be clean and dried in the same manner. After the inlay is set I allow at least half an hour before taking the rubber-dam from the tooth. A coat of copal ether varnish is used to protect it for a day or two. The reason I use porcelain in crown cavities in molars is that when the cavities can be made circular it is easier to fill them; there are no thermal changes and it takes less time than to use gold and it will probably last as long as gold.

"TO MAKE A MIL-AMMETER FOR CATAPHORESIS," by Dr. L. E. Custer, Dayton, O. Have made some experiments for a cheap galvanometer and find the following to answer all requirements:

Take an empty Barbour linen thread spool and wind it full of 28 or 30 gauge insulated copper wire. Mount this on a base which can be revolved horizontally. Fix a small jeweled compass on the spool. Now turn the base around till the compass-needle stands at right angles with the axis of the spools and mark off the deflections by testing in series with a standard mil-ammeter. Before each operation adjust the base so that each needle stands at zero.

"SUGGESTION ON THE ORIGIN OF SOME CASES OF PYORRHEA ALVEOLARIS," by H. C. Matlack, D. D. S., Cincinnati, read before Miss. Valley Dental Society, April, 1896. We sometimes find men who will hesitate to advance an opinion which has a direct medical bearing, thinking that to be dogmatic and self-assertive without due reason is illogical and unjustifiable—which presents the spread of some thought and the solution of some great question. The following will be presented for what it is worth. I will

try to show that there are *some* cases of pyorrhœa alveolaris whose origin may be syphilitic.

On October 14, 1895, a lady, 28 years of age, presented herself for treatment on account of looseness of upper front teeth. The four upper incisors were found to be very loose, gums could be lifted from necks of teeth, pus exuding, and the general conditions present which caused a diagnosis of pyorrhœa alveolaris, although no calcareous deposit was found on these or any of the other teeth—pyorrhœa instruments being used to determine whether there was a deposit or not. The lady has been a patient of mine for several years, so that any inclination to salivary calculus or other deposits due to carelessness in cleansing the teeth would have been noticed. About eighteen months ago this lady was married to a young man who was supposed to have recovered from a severe attack of syphilis. On questioning the patient, I found that in May, '95, she had a severe case of iritis, which, by the time she was referred to an oculist, had developed into choroiditis. Now, from a number of authors, we find that choroiditis is a frequent disease in all ages, and the most ordinary cause is syphilis, both acquired and hereditary. Upon consulting a number of writers, we find that we have syphilitic iritis, choroiditis, deafness, otorrhœa or a flow from the ear, syphilitic headache, produced by the virus irritating the membranes of the brain and pericranium; syphilitic complaints in the nose, originating from the immediate application of the virus to the nostrils; syphilitic sore throat; syphilitic swelling of the bones, where may be traced one of the causes of exostosis of the teeth. The following, under the head of "Syphilitic Toothache," taken from a work published as early as 1801, shows that even then some diseases of the teeth were attributed to syphilis:

"The syphilitic virus, in affecting the eyes, the mucous membrane of the nose and throat, sometimes attack the gums, producing syphilitic toothache, which must be carefully distinguished from that produced by mercury or mercurial odontalgia." Showing that attention was called to the difference between ptyalism and some other affection of the gums, perhaps pyorrhœa. No portion of the body is exempt from the attacks of syphilis. Stanley has the following, which shows that there is such a thing as syphilitic periostitis: "Syphilis is a well-recognized cause of

inflammation of the periosteum. Systems debilitated by mercury and other drugs are thus rendered particularly susceptible to the influence of cold and moisture, and inflammation of the periosteum of one, and oftentimes *several*, bones is of *common* occurrence. The reason of this is probably because the surface of the bones, superficially situated, are most exposed to external influence, that these two are the usual seat of periostitis. Acute inflammation of the periosteum occasions *increase* of its *vascularity*—*thickening* and *softening* of its tissues—*loosening of its connection with the bone*—*serous or purulent effusions between it and the bone.*"

Although it appears from a clinical history and pathological changes that the diseased action is marked at the extremities of the long bones, where nutritive changes are the most active, it is not confined to the ends of the long bones, and does not manifest itself in the interior of those parts of the extremities of the bones which are not covered externally by the periosteum, which gives the conclusion that in the majority of cases the periosteum is the tissue *primarily* involved in the diseased action, the bone being implicated in consequence of the periosteal abnormalities frequently occurring either before or during eruptive stages of primary syphilis. During these early stages, although the pericementum is affected at the time, the patient is unable to localize the pain, which may be similar to locating an aching tooth; but later on, when the eruptive period of the disease is developed, the gums become excessively tender on pressure. These conditions being present in the case cited caused a further consideration of the subject. By the kindness of Dr. Evans and Ravogli, the City Hospital was visited, and twenty-three syphilitic patients were examined, eleven having true pyorrhœa. Now, to counteract the thought that there were probably cases of ptyalism, the attending physician stated that although a small amount of mercury was used, no ptyalism had been produced in any case. The case referred to in the beginning was treated in the usual methods; three of the teeth responded readily to the treatment, but the upper right lateral was not cured the last time I saw the patient.

I had intended to take up another phase of the subject, that is, that some cases of pyorrhœa alveolaris may be of tubercular

origin; but, as this paper was intended to be a suggestion only, the further consideration of the *tubercular idea* will be postponed to some future date.

Discussion. Dr. Knight: A case, in instance, occurred in a young man who some years ago consulted me in regard to an extremely offensive ozena. For some months previous to this he had been under the care of his dentist, suffering from pyorrhœa alveolaris accompanied with loosening of several of his teeth. Investigation of this patient revealed him to be a victim of congenital syphilis. He was placed upon constitutional treatment for the disease. His improvement was steady and continuous, the pyorrhœa alveolaris, which had resisted prolonged local treatment, disappeared, and the teeth became gradually tightened.

Dr. Fletcher: My hypothesis about the matter would be after this manner. We know that the bacilli of tuberculosis (when the patient has become affected) have a tendency to form colonies in various tissues of the body, and especially the endothelial and epithelial membranes, such as the joints, the lungs and the mucous membrane of the air passages, and often in the skin, when it is called lupus; these tubercles are first invisible, when they are called granular, when a little larger they are called crude and then miliary tubercle; the last is so-called from its being about the size of a millet seed, and they may ultimately be much larger.

When the miliary size is reached, the tubercle may become caseous and then begin to break down in the center, not forming true pus, but a watery, milky fluid, just such a discharge as is often found in these pockets about the teeth. No doubt many of you have seen just this character of discharge from them. Now, the physical character of the two discharges being identical leads me to think that many cases of pyorrhœa may be of tubercular origin. This could be determined by microscopical examination of the discharge, and I trust that the essayist, or some one else, may take up this subject from this standpoint and give us some facts and statistics relating to tubercular origin, as well as the syphilitic or other cause of the disease.

The International Dental Journal for June, 1896.

"AN INTERESTING CASE," by Dr. S. L. Goldsmith, New York. Miss A., who at the time was undergoing some painful dental treatment, said, "Oh, if hypnotism were only advanced to such a stage that one could have the teeth filled without pain!" I replied that it was not an impossibility even now; in fact, that it had been done. The patient then expressed a desire for me to try it upon her, and with the precaution of having a third party present, I endeavored without success to hypnotize her. In the meantime I ascertained that the patient was a sufferer from insomnia, and, as I saw a greater object in view, I tried again at her next appointment and succeeded. The hypnosis was complete.

I excavated the cavities and, in fact, separated teeth with almost no pain. The method used was the so-called "mixed method,"—that is, a combination of the suggestions of Bernheim and the strokings, etc., of Charcot.

Now, having found that the patient was a good subject, and as insomnia was out of my sphere of practice, I took her to a medical collaborer of mine, who at once examined her, and finding no organic disorder which could cause her trouble, ventured a very favorable prognosis with the treatment mentioned. The physician then put her into the hypnotic state and suggested to her that she would sleep the ensuing night from ten until 6.30 next morning. At 9.30 that evening the patient was so sleepy that she could no longer hold her book, and retired. Upon awakening she looked at her watch, the hands of which pointed to 6.35. For years her limit of sleep had been three hours a night. The physician has gradually lengthened the time over which the suggestion was to have effect, until now one suggestion has given her a proper night's rest every night for six weeks. I have no doubt that this can soon be lengthened to six months, and, in fact, that in a couple of years the suggestion will not be necessary at all.

Before the commencement of our treatment Miss A. was a nervous, morose individual, who jumped every time the door-bell rang. Since the treatment she has materially gained in weight and is as happy as a well-nourished young lady should be.

"THIRD SET OF TEETH." The *Sunday Herald*, of Syracuse, New York, reports a case at considerable length of one James Slattery, of that city, who has apparently erupted late in life a portion of the full denture, with the prospect of more teeth presenting in the near future. Dr. S. B. Palmer, of Syracuse, made an examination of the case and reports as follows:

"In the inferior maxilla are eight teeth located as follows: four incisors and two cuspidati corresponding with the cuspidati of the superior maxilla, and two small bicuspid on the right side. The cuspid on the left side and the second bicuspid on the right side are somewhat loose. The alveolar process does not extend up and entirely around the roots. The other teeth are firm and of usual size and length, but are somewhat overlapped from crowding and discolored by smoking; in other respects they present the appearance one would expect at his age.

"On the left side, in place of the two posterior teeth ordinarily found, are three parts of teeth, resembling roots, having grown up partially out of the gums. They are not firm or well-developed teeth. The man insists that they also appeared within the time mentioned, two years previously, and that they belong to the same set. One is loose and turned against the cheek, and will require extraction. The other portions of the jaw show no signs of further eruption of teeth, as considerable absorption has taken place.

"An examination of the superior maxilla shows that the third set, more numerous than those in the inferior, will soon make their appearance. The jaw is thick and full nearly all the way back, raising the lip and giving the fullness peculiar to a child's jaw of six or seven years, or about the period of the eruption of the teeth of the permanent set."

The history of this singular case is briefly as follows: James Slattery is a well-developed man of six feet two inches and weighing two hundred and thirty pounds. At the age of eighty-seven he was edentulous, having lost his second set of teeth. At about this period he noticed a painful condition of the gums, or, as he expressed it, "they began to ache badly," and for two years they continued to erupt in the inferior maxilla, and will, in time, develop in the superior.

This seems the best attested case of third dentition we have

met with on record, and it is hoped Dr. Palmer will secure testimony as to the character of the set prior to becoming edentulous through advancing years. The dental profession has regarded a third set of teeth as a myth, and with some reason, as most of the so-called third sets have proved, on investigation, to be simply delayed dentition of the regular second set.--[ED. *International.*]

The Dental Cosmos for June, 1896.

"THE X RAY AND ITS APPLICATION IN DENTISTRY," by William James Morton, M. D., New York City, read before the New York Odontological Society, April 24, 1896. The application of the X ray will, I believe, greatly aid the art of dental surgery. In general surgery it is difficult to overestimate the importance of ascertaining the exact outlines of imbedded bones, or foreign bodies, to differentiate between a dislocation or a fracture, or to ascertain the co-existence of both. The X ray already makes these cardinal issues an open book; it does more, it locates tuberculous deposits now known to frequently invade the osseous tissue and to be impossible of detection except by exploratory incisions; it locates also sarcoma and accompanying erosions of the bone within the narrow cavities, and it is more than possible that, thanks to the labors and the practical mind of Edison, these triumphs of localizing and diagnosing records upon photographic plates will be supplanted, at least for quick and ready examinations, by the new art of X ray fluoroscopy. It was one thing to note that fluorescent substances outside of a tube were excited, it was quite another to find a working fluorescent substance and build it into a practical screen. This Edison did, and the efficacy of this screen and its revelations grow apace; its definition and degree of illumination increase week by week. Tesla already reports that he has seen through three men, that he has seen the great bones of the body, and seen the heart beat. Again and again I have looked through the human body and seen not only the vertebræ, the ribs, the hip-joint, but also located larger and denser organs like the liver; nay, more, I have watched the heart in its beatings. Who can guess to what lengths the visual exploration of our interior organization may reach when so much is already possible?

This enumeration, brief as it is, is a great triumph for the X ray, and these same questions of diagnosis and of localization are equally applicable to dental surgery.

The radiographs presented to you here to-night are but a first step toward taking pictures of the living teeth. They open out to your view a wondrous field for investigation and study and diagnosis. Each errant fang if distinctly placed, however deeply imbedded within its alveolar socket; teeth before their eruption stand forth in plain view; an unsuspected exostosis is revealed; a pocket of necrosis, of suppuration, or of tuberculosis is revealed in its exact outlines; the extent and area and location of metallic fillings are sharply delineated, whether above or below the alveolar line. Most interesting is the fact that the pulp-chamber is beautifully outlined, and that erosions and enlargements may be readily detected. A new method of studying pathology in the living subject is laid before you.

To what perfection, gentlemen, may not the science and art of dentistry reach if some of the new things which press upon your attention are fully realized. Already painless dentistry is within your grasp by aid of electricity and simple anesthetics, and now the X ray more than rivals your exploring mirror, your probe, your most delicate sense of touch, and your keenest powers of hypothetical diagnosis.

The Dental Review for June, 1896.

"SHOCK," by Garrett Newkirk, M.D., Chicago, read before the Illinois State Dental Society. One of the best articles upon the subject which I have ever seen is that contained in the first volume of the "American System of Dentistry," division of General Pathology, page 719, written, as you know, by one of our own number, Prof. Black. I shall take the liberty in this paper to quote from this article somewhat freely.

Dr. Black's definition of shock is as follows: "Shock is a sudden and notable depression of the vital powers resulting from an injury more or less grave, or from an impression made on the nervous system through the medium of the sensorium, as by fright, sudden and overpowering mental emotion," etc.

We may say, to enlarge a little upon this definition, that whatever is capable of producing a sudden and profound impression

upon the mind, or upon the nerves, may result in serious shock; that any sudden impression which causes more or less pain or abnormal disturbance of the circulation may be said to be of the nature of shock.

The state of prostration which follows upon one overpowering blow, whether the blow be primarily mental or physical, may also be induced by a large number of successive small shocks extending over a considerable time, as of several hours. The term *collapse*, as it seems to me, is not synonymous with *shock*, but belongs rather to the last stage or sequence of shock.

In the domain of general surgery shock is a matter of grave importance. Here it may be divided into two classes: 1. Shock produced by accidental injuries which require the attention of the surgeon. For a long time it was a matter of common observation, but not understood, that injuries of a certain class were often followed by collapse and death. That in other cases injuries more extensive were followed by speedy reaction and recovery. This was specially noticeable in the department of railroad surgery, where instantaneous crushing force is so often the cause of injury. To these observations, probably, we owe much of the more recent development of thought in this direction.

2. A surgical operation, undertaken though it may be for the relief of injury, is itself to be considered as an injury in relation to shock.

The idea of shock must not be confounded with that of pain. They are often associated, but they are distinct and separate things. The injury that produces shock may at the same time cause pain. The sensation of acute pain, or the mental fear and dread of pain, may and often does induce shock; or the shock of pain or of emotion may be added to that of physical injury.

But the victim of severe and dangerous shock may be entirely unconscious of the injury received. He may be stunned by the same force which produces the lesion, or in such a state of excitement as to know no pain, and yet be found within a few moments in a state of collapse. Here the discovery and general use of anesthetics has been of great value, in that it has made it possible to subtract the elements of emotion and sensation from the sum total of shock impression. However, this subtraction is not

without possible counter-addition, in that the anesthetic itself may have serious depressing influence, so great in some instances as to overbalance its benefits.

The immediate danger in shock appears to be in its relation to the vascular system. Through temporary paralysis of the vaso-motor nerve centers, there is extreme dilation of the arterial vessels generally, and it is supposed that in fatal cases death results, not so much from failure of the heart to act, but because blood is lacking for the heart to act upon, and, as Dr. Black remarks, the patient "bleeds to death without the loss of a drop of blood." The heart is emptied into the relaxed blood vessels.

Therefore, the first and most prominent symptoms of shock pertain to the circulation of the blood. There is first pallor of the countenance, a weak and small pulse followed by dullness of the senses, a staring eye, numbness, coldness of the extremities, lack of will and muscular power. Questions are answered by monosyllables or not at all, there is partial or complete loss of consciousness, in short, collapse.

In this connection, I desire to mention a cause of shock which, as I believe, has been but little recognized as such, namely, the action of drugs. I have a patient who exhibits all the primary symptoms of shock if a bottle of chloroform be opened in the room. A friend of mine has a patient similarly affected by camphor. These are examples of idiosyncrasy, but there are agents, deadly poisons we call them, which cause death apparently by shock pure and simple. They so impress and suddenly paralyze the vaso-motor centers that the heart is bled to death by the relaxed blood vessels. Possibly this is what cocaine and other agents of that class probably do.

It is my opinion that extra susceptible children or young people should not be kept in the chair as a rule more than half an hour at a time. Adults (usually they are women) not more than an hour, as much less as may be. We prepare too many cavities and fill them at one sitting. We do not use temporary stoppings of gutta-percha as frequently as we should, waiting for recuperation from shock. We think possibly not too much of teeth, but too little of the individual behind the teeth.

Letters.

AN EARLY DEMONSTRATION OF CEMENT AND ALLOY FILLING.

BROOKLYN, July 12, 1896.

To the Editor of the Dental Digest,

DEAR DOCTOR:—In the February and June nos. of the DIGEST I have seen articles by Dr. W. E. Driscoll, on "Alloy and Cement for Filling."

In answer to these I send you the January, 1887, *Cosmos*, which contains my clinical report before the First District Society. "The First District Dental Society of the State of New York held a regular monthly meeting, Oct. 5, 1886. Dr. C. W. F. Bodecker, chairman of the Clinic Committee, reported as follows: * * * Dr. Reese, of Brooklyn, showed his method of inserting gold and amalgam fillings by first lining the cavities with oxyphosphate, and then, while the oxyphosphate is still soft, putting in the first layer of gold or amalgam or whatever material he may use. In this way he gets an anchorage of the gold or amalgam in the oxyphosphate. He demonstrated his method out of the mouth in teeth set in plaster." This will prove to you that I have not only practiced this theory, but that I presented it to the dental profession at that year.

By giving this space in your valuable journal you will greatly oblige,

Yours truly,

GEO. F. REESE.

THE LITERATURE OF CEMENT LININGS.

PHILADELPHIA, July 7, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—I am somewhat impressed that Dr. Driscoll is in error in supposing that the lining of cavities with cement has been neglected by the Dental Journals. The idea dates from the first use of the cements or non-metallic plastics, and has been so often noticed, and in so many ways, and used with so many objects in view, it will be difficult, I think, to devise any method of so using it really new. The old oxychlorid zinc cement was

so used as soon as introduced, about 1857-8. Dr. J. S. King, of Pittsburg, Pa., was an earnest advocate of its use. I have seen a number of fillings made by him, beautifully done on the approximal surfaces of front teeth, the mass of the filling being of cement, perfectly covered with gold malleted on, beautiful after ten or more years of service. I refer to it in a paper in the *Dental Cosmos*, Vol. XVII, July, 1875, page 347. Dr. Flagg advocates it as one of the approved new departure methods; indeed, an hour or two spent looking over the files of any *Dental Journal* will dispell the idea that it has been neglected.

In this connection I note another old idea recently revived; that of lining the cavity with very soft amalgam, then finishing the filling with amalgam containing less mercury. W. A. Roberts, M. D., L. D. S., speaks of it at a meeting of the Odonto-Chirurgical Society of Edinburgh, July 13th, 1875, (*British Journal of Dental Science*, Vol. XVIII, August 1875, page 431). There are a good many excellent ideas buried up in the old dental journals, journals that ought to be collected in libraries convenient of access to members of the dental profession, instead of being unbound and dust-covered in some out of the way corner, liable at any moment to be consigned to the dump, or to the kitchen fire. That we have so few dental libraries is no credit to our profession, and in many ways is a serious loss.

Yours respectfully,

WILLIAM H. TRUEMAN.

NEW YORK LETTER.

NEW YORK, July 18, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—July in New York is of "unknown" doings, so far as societies are concerned. The steamers have carried many of our New York dentists across. Dr. Kingsley will spend some time in Dresden, as the guest of Dr. Jenkins, and will read a paper before the American Society of Europe, on "The Correction of Facial Deformities." Dr. Northrop has migrated, his only desire being an absolute relaxation. It seems a pity that more of us do not take more relaxation from too close application.

Rumor has it that Prof. Frank Abbott has learned the folly of

too much work too late, for he is threatened with a serious illness and much solicitude is being expressed. He has accomplished a vast amount of professional labor during the last thirty years.

W. W. Walker has gone to London, and will doubtless secure attractions for the autumn meetings of the Odontological, and we risk the prediction that he will secure the best there is.

Dr. Benson, of New York, goes to Europe annually. He has perhaps the most settled "mechanical" practice in the country. For many years he constructed dentures for other practitioners and finally worked up a select, well-paying practice, for good fees are not wholly absolute here.

Perhaps it is partly true that the days of liberal remuneration have passed, but there is a small class who have steadily gone forward in their "special" work. We are sure that the energy which focuses round a specialty insures a fruitful harvest. There is never monotony in a specialty, every case has its fresh interest. Right here we are convinced that no calling offers such rich fields in special lines as our own profession; that is, for able, earnest young men. We again emphasize our dear Atkinson, that it requires the best of men for our calling.

This reminds us that Dr. Atkinson's collection of books, pamphlets, etc., has lately been sold at auction for a fraction of its value. We feel that notice of the sale should have been widely circulated, for there were in his collection many hundreds of books and much material worthy of preservation—valuable scientific works, files of all his papers, etc. Truly, "one gathereth, and another scattereth."

The same old story. We recently met a practitioner who had been duped by buying an absent dentist's practice. All he got was a few office fixtures and the bad reputation left by the seller. Our observation proves that money paid out for an absconding dentist's practice will do little towards building up a practice of one's own.

From New York to San Francisco in '97. This is the purpose of the Pacific Coast Congressional Committee, so we see by a private letter. It does not say that they are prepared to offer a gratuitous trip for the A. D. A., but they are prepared to offer one of the most alluring programs that has ever been presented to any body of men who have ever visited California. It is in-

estimated that a good many of our men of moderate means would like to take the trip, and even take one or more members of their families with them. However, there is much uncertainty of expense incident to such a journey, and every one who travels knows that there is need of consideration on this point. There is a manifest desire to know just what the trip will cost from start to finish, including all expenses—travel, hotels, sight-seeing, etc. From what we have heard a decided enthusiasm could be aroused in the profession, making an excursion that would long be remembered, not only by us in the East, but also on the Pacific Coast. Their sunny land would for the time being flow with milk and honey, and would be at the disposal of those of the A. D. A. who were fortunate enough to become the guests of the Pacific Dental Congress. This sub-committee, appointed by the Congress to visit Saratoga during the session of the American, evidently means business, and doubtless is authorized to place the entire Pacific Coast at their disposal, providing they do not carry it home in their trunks.

We cut from the Royal Academy art notes, in the *London Lancet* for May—"One of the best portraits in the gallery is by Mr. Herkoner, the subject being Dr. J. Leon Williams, whose learned paper on the minute structure of enamel, recently communicated to the Royal Society, we publish this week. The portrait is hung in a fine position, is a good likeness, and a truly artistic picture."

It seems a pity that we have not had more interchange with English practitioners, but few of prominence have visited our American convocations. Mr. Tome's visit here can be emphasized as very noteworthy, certainly of a truly scientific man. We feel certain that they missed a golden opportunity by not coming to our Columbian Congress.

We see by the June DIGEST that another of our long honored professional brothers has gone, Dr. C. W. Spaulding, for many years practicing in St. Louis. Surely he was a staunch practitioner among his numerous associates in that city. We recall seeing Dr. Spaulding clinic at our first meeting with the A. D. A., at Philadelphia. This clinic was a hard cylinder filling; we had never seen one made before. It was a large posterior proximal cavity in a superior cuspid, and the operation was excellent. The Doctor demonstrated at this time his preventive dealing with

sensitive tooth structure with hot burnishers. He believed in the practice and it was effectual. The old school are fast passing from our sight.

The reference to lining cavities for amalgam fillings is surely something that can be profitably noticed. We have heard it much talked of for several years, but it does not seem to have obtained a firm foothold in actual practice as yet.

The editorial remarks in the last DIGEST regarding the possibilities of the Faculties' Association and the National Board of Examiners are in accord with the general drift of thought and expression. There is but one voice regarding a uniformity of law governing practice throughout the United States. Qualifications in one State should be the standard for all, and why there should be such a seeming apathy and delay in consummating a uniformity of legislative action is a question which is asked by a large proportion of the profession.

Keely, of gold cure fame, is out with a book denying that drunkenness is a vice or crime, and that heredity is destroyed by the poisonous effects of alcohol. He says that disease cannot be given by heredity. So far as it asserts this, there is opened an interesting field for discussion. However, it is too hot just now to argue about anything.

Cordially,

NEW YORK.

How dear to our heart is the cash on subscription

When the generous subscriber presents it to view;

But the man who don't pay—we refrain from description,

For perhaps, gentle reader, that man may be you.—*Exchange*.

A CASE OF UNUSUAL SPEECH DEFECT.—Dr. G. Hudson Makuen, of Philadelphia, presented a young law student who had a marked retraction of the lower jaw, which destroyed the character of the labial sounds. This could only be overcome, he said, by long practice in protruding the lower jaw when speaking. The soft palate was much relaxed, and had been impeded in its action by the existence of adenoid growths. In trying to say "s," instead of the palate rising to the roof of the mouth, it remained down on the tongue. He considered the adenoid thickening in the pharynx as the original cause of the defect in the speech. The patient had received careful instruction as to the best method of overcoming the difficulty of speech, and he demonstrated clearly the marked improvement that had already resulted from persistent practice along this line.—*Dental Register*.

The Dental Digest.

PUBLISHED THE

TWENTIETH DAY OF EVERY MONTH.

Editorial.

MORE REMARKABLE JOURNALISM.

As an example of the peculiar methods adopted by the editor of the *Items of Interest*, note the following. In the July, 1896, No. of the *Items of Interest*, under the head of "Original Communications," is a short article by W. E. Driscoll, entitled "Alloy and Cement for Filling." The whole of this article is taken, word for word, from a letter headed "Alloy and Cement for Filling," which Dr. Driscoll sent to us and which was published in the February, 1896, No. of The DIGEST. Nevertheless, absolutely no credit is given to this journal by the *Items of Interest*.

It is a pity that the editor of a dental journal should set so bad an example by his actions, no matter what precepts he sets forth in his editorials. The aim of dental journalism should be to inculcate higher ideals and motives, and to create a higher standard of morals, but such practices by an editor certainly do not tend to that end.

BETTER QUALIFICATIONS FOR A DENTIST.

It is not our intention here to go into details as to what the qualifications of a dentist should be, but to make this one broad proposition—that to be a good and successful dentist in every sense of the word requires more varied ability than any other profession.

The question may be asked how so many succeed in dentistry if this proposition be true, which can be answered by the fact that there is one prominent element or portion of dentistry which is largely mechanical. Therefore, as many men who come into the profession have some perseverance, tact, and a little ingenuity,

they succeed sufficiently to make a moderate living. But in the broadest sense of the term it requires men of great ability to be successful in all respects.

We think it proper to agitate this question again at this time, for the reason that in a very few days the College Faculties Association and the National Board of Dental Examiners hold their annual meeting, and as they alone have any say as to what the qualifications shall be, it is important that they discuss this question. At present the dental profession is a catch-all for many of those who fail in other lines of business—they drop into dentistry and succeed to the extent above indicated. College men should look into it that a higher grade of intellect, intelligence, and natural ability be required of their students and graduates.

If we are correct in our estimate of what the qualifications of a dentist should be, then a higher appreciation of these facts by college men is sure to induce them to require greater ability in those they admit to their classes. And the National Board of Examiners should see that laws and rules governing those starting in practice be of such a high order that before long the ability will be increased. We are aware that in this connection the colleges are doing a vast amount of work, nevertheless, the demand is in the direction here indicated, and if they wish to avoid criticism they must remedy the evils now existing.

PAINLESS DENTISTRY.

Under the name of "Painless Dentistry" a vast amount of deception has been practiced upon the community, especially since the introduction of cocain as an anesthetic. We gave an expose of some of these abuses to the members of the Protective Association, who asked for same, some years ago.

While it is true that cocain has no preceptible effect on sensitive dentine when applied direct, if injected into the gums, teeth can be extracted or prepared for filling with comparatively no pain. And dangerous as this remedy is, it has been used to a great extent.

Besides the use of cocain the practice of Hypnotism is on the increase and is being taught in some of the dental schools. This

method of obtunding sensibility is looked upon by many as unwise and detrimental, especially to the will power of the patient, and even as impossible by a greater number of dentists.

There is a great desire on the part of those requiring dental service to have it performed with as little pain as possible, and the impression is on the increase that such service is being performed without pain. This causes many practitioners to avail themselves of everything offered which gives promise to satisfy this desire on the part of their patrons, even to the extent of humbugging them into the belief that the suffering is going to be lessened, when in fact they give no special relief except to slight the operations.

The administration of anesthetics is dangerous and therefore objectionable. It is not our intention, however, to take up at this time the merits or demerits of any anesthetic, but to treat with the more recent method of relieving the suffering of our patients by Cataphoresis. Our attention was directed to this method some years ago, owing to the patents on the different apparatus and the disposition on the part of the companies formed for the manufacture and sale of same to mulct the profession. In fact, most of the apparatus that has come out thus far has been involved in secrecy, with a disposition on the part of the manufacturers to involve it in great mystery.

We believe we are correct in stating that all that is required in an apparatus is to control the current of electricity, making it possible for the operator to increase the current or voltage without any break in the current, and be able to carry it to the degree necessary to force the action of the cocain into the dentine or tubuli of the tooth. This method bids fair to be almost universally successful. Think for a moment what this means to the community, as well as the profession.

It is our desire to check this patent abuse and make it possible for the profession to have an apparatus in every way effectual, simple, easily managed, and yet quite inexpensive. With this in view we have made an apparatus which in every way carries out these requirements. This apparatus we propose furnishing to the members of the Protective Association, and we will take care of any patent litigation growing out of its use, believing that anything which bids fair to relieve suffering, as we feel confident this

does, should not be involved with patent monopoly, especially when such patents will not stand a judicial test.

We will furnish our readers a fuller account of this work in our next issue.

Notices.

NORTHERN IOWA DENTAL SOCIETY.

The Northern Iowa Dental Society will hold its next annual meeting at Spirit Lake, Aug. 11-13, 1896, to which all dentists are invited. An interesting and profitable meeting is expected.

GEO. H. BELDING, Sec'y.

HARVARD DENTAL ALUMNI ASSOCIATION.

The Silver anniversary and twenty-fifth annual banquet of this association was held at "The Thorndike," Boston, on June 22, 1896, with sixty-three members and guests present.

The prosperity of the Association was shown by the reports of the Secretary, Treasurer, and Committee on Harvard Dental School, which were submitted.

The invited guests present were: Rev. R. Thomas, D. D., Brookline; Hon. Harvey N. Shepard, Boston; Rev. Willard T. Perrin, S. T. B., Boston; and John H. Colby, Esq., ex-councilman of Boston City Government.

The post prandial exercises were inaugurated by Pres. James Shepherd, who alluded feelingly to the deaths, since the last meeting, of Prof. Thomas H. Chandler, dean of the School, and of Frederick H. Woodcock, instructor in mechanical dentistry. He then called upon the new dean, Prof. Eugene H. Smith, as the first speaker. Dr. Smith, after eulogizing his predecessor and Dr. Woodcock, spoke of the requirements of the school, that greater facilities were needed for increasing the scope of its work. A new building was necessary, now that Chemistry was no longer to be taught in Harvard Medical School, but must be in the dental building; also, that the school needed an endowment fund. The graduating class, numbering twenty-two, was the largest ever within the school's history.

Each of the guests spoke in a happy manner with excellent effect, and several were humorous to a great degree.

The officers for the ensuing year are as follows: Frank Perrin, D. M. D., '77, President; Joseph T. Paul, D. M. D., '91, Vice-President; Waldo E. Boardman, D. M. D., '86, Secretary. Executive Committee, Waldo E. Boardman, D. M. D., Chairman, William P. Cooke, D. M. D., and Harry S. Parsons, M. D., D. M. D. The officers of the association compose the committee.

WALDO E. BOARDMAN, D. M. D., '86, Sec'y.

AMERICAN DENTAL ASSOCIATION.

Arrangements have been completed as far as possible for the meetings at Saratoga, July 31—August 8, 1896. *All the railroads have granted a reduction of a fare and one-third on the certificate plan. Pay full fare in going and be sure and take a receipt therefor, otherwise the reduced rate cannot be obtained for the return trip. Tickets may be bought July 28th, and are good until three days after the meetings.*

The meetings will be held at the Grand Union Hotel. Hotel rates range from \$4.00 per day to \$8.00 per week. Write to Dr. E. Doolittle, Saratoga, N. Y., and secure your room now. Any priced room can thus be secured and all trouble and confusion avoided.

The most interesting meeting for many years is promised and one which no progressive dentist can afford to miss. Take the time and attend this—the National Association.

J. N. CROUSE, Chairman Exec. Com.,
2231 Prairie Ave., Chicago.

MASSACHUSETTS DENTAL SOCIETY.

At the thirty-second annual meeting of the above named society, held in Boston, June 3 and 4, 1896, the following officers were elected for the ensuing year:—President, Waldo E. Boardman, D. M. D., Boston; First Vice-President, S. S. Stowell, D. D. S., Pittsfield; Second Vice-President, Harry S. Draper, D. D. S., Boston; Secretary, Edgar O. Kinsman, D. D. S., Cambridge; Treasurer, Edward Page, M. D., D. M. D., Charlestown; Librarian, Thomas W. Clements, D. D. S., Brookline; Editor, Joseph T. Paul, D. M. D., Boston.

Executive Committee, appointed by the president:—Dr. G. A. Lowe, Rockport; of North Eastern District Dental Society; Dr. W. M. Lamkin, Lynn, of North Metropolitan; Dr. L. D. Shepard, Boston, of South Metropolitan; Dr. B. H. Strout, Tauton, of South Eastern; Dr. J. F. Adams, Worcester, of Central; Dr. Geo. A. Maxfield, Holyoke, of Valley; Dr. A. W. Gabler, Pittsfield, of Western.

Committee on Dental Legislation, appointed by the president:—Dr. R. R. Andrews, Cambridge; Dr. L. D. Shepard, Boston; Dr. S. G. Stevens, Boston; Dr. Geo. A. Maxfield, Holyoke; Dr. C. T. Stockwell, Springfield.

ALUMINUM has not proved to be of very much value for surgical instruments, as it is deficient in elasticity and will stay bent. The instruments are also so light that the surgeon misses the reliability that the weight of steel imparts.—*Ex.*

RELIEF OF THIRST AND DRYNESS OF MOUTH.—Thirst and great dryness of the mouth in illness are often relieved by a teaspoonful of powdered gum arabic, beaten thoroughly with a couple of teaspoonfuls of glycerin, to which are added a glass of cold water and enough lemon-juice to make the mixture palatable. The mixture may be taken freely.—*Medical Times.*

News Summary.

ETHYL CHLORIDE spray stopped hemorrhage from an extracted tooth socket.—*Hind.*

ALABAMA EXEMPTS DENTISTS FROM JURY DUTY.—A law was passed in Alabama in 1895 providing that all practicing dentists in the State shall be exempt from jury duty.

WANTED.—Position with professional dentist, by experienced operator, crown, bridge and plate worker. Address "A," Care Dental Protective Supply Co., Champlain Bldg., Chicago.

CHICAGO COLLEGE ALUMNI QUARTERLY.—A copy of the *Bur*, the official organ of the Alumni Association, Chicago College of Dental Surgery, is before us. It is a continuation of the *Alumni News*, and is very neat in appearance. We wish it success.

DENTISTRY FOR WIDOWS.—Widows of Russian officers who are not entitled to pensions are to be provided with a novel means of obtaining a livelihood. In the autumn ten vacancies at one of the principal schools of dentistry will be open to them, and, after a two years' course of instruction, the successful candidates will be in a position to practice.—*Chicago Tribune.*

EUCAINE.—Under this name a new substitute for cocaine has been brought out by a Berlin dentist named Kiesel. It is prepared synthetically, and the chemists describe it as "a methyl ester of benzo-yloxypiporidine carboloxylic acid." It is claimed for it that it does not affect the heart, produces more extensive anæsthesia than cocaine, and is non-poisonous. Probably, it will also be much cheaper.—*Brit. Jour. Dent. Sc.*

A POSSIBLE SOURCE OF INFECTION.—The *New York State Medical Reporter* suggests that the promiscuous use of ordinary drinking-water for the extemporaneous preparation of solutions for hypodermic injections is possibly the cause of much disease, the infection of which is capable of transmission through the medium of water, as malaria, typhoid fever, and diphtheria.

ADVANTAGE OF USING WARM SOLUTIONS OF COCAIN.—Costa has found that the local anesthetic effect obtained with cocain is more rapid, more intense and more lasting, if the solution is warm. The dangers of intoxication are thus much diminished, as the quantity of cocain can be very much reduced, if it is warmed. A solution at 0.5 or 0.4 per cent. heated will produce a powerful effect.—*Semaine Medicale*, May 9.

SOLUTIONS.—The calculation of percentage solutions is always based upon the number of grains of water in a fluid ounce. The exact weight is four hundred and fifty-five grains, and the simplest way is to multiply this number by the percentage desired. In other words, we take one grain of the drug for every hundred grains of water. Thus to obtain a four per cent solution, we multiply four hundred and fifty-five grains by four per cent, which gives

eighteen and two-tenths grains, or, roughly speaking, eighteen grains to the fluid ounce of water.—*Medical Brief.*

ATTACKS OF STRIDULOUS LARYNGITIS COINCIDING EXACTLY WITH APPEARANCE OF CERTAIN TEETH.—Coulon (*La Médecine Infantile*, 1855, ii. 643) reports that three to seven days before the appearance of the first tooth, at eight months, of the inferior canines at nineteen months, and of the last molars at twenty-four months, there were attacks of false croup coming on in the middle of the night and lasting a few hours. Constipation followed by diarrhoea also usually preceded by a few days the cutting of every tooth.

AN INTERESTING FIND.—A couple of teeth found at Tanbach, near Weimar, are, says *Nature*, claimed to be the oldest human teeth yet found in Europe. One is a milk molar, and the other a permanent first molar of the left lower jaw. The grooves in the latter tooth shows a striking resemblance to one of the chimpanzee, but not so much to those of the gorilla or ourang. Attention is called to the fact that certain of the molars in civilized man are reduced in size from those of early man, just as has been shown to happen with domesticated dogs descended from wild dogs.

ALLEGED SAFE METHOD OF INHALING CHLOROFORM.—According to Dr A. Guérin, of Paris, death from chloroform may be avoided if it is inhaled exclusively through the mouth. When death occurs from stoppage of the heart, the cardiac muscular fibres cease to contract under the influence of a reflex action exerted by the nasal nerves on the pneumogastric, stimulating the inhibitory power of the latter on the heart. He further shows that when a rabbit is subjected to tracheotomy, and then made to inhale chloroform directly through the trachea, the drug has no effect whatever on the heart. On the contrary, when chloroform is held before the nose of the rabbit, the heart immediately stops. The trachea being cut transversely, it is obvious that the chloroform inhaled by the nostrils cannot reach the heart through the bronchi. Dr. Guérin therefore assumes that the anæsthetic agent exerts its injurious action upon the movements of the heart through the intervention of the nasal nerves and the cardiac branches of the pneumogastric, the former acting reflexly on the latter. Dr. Guérin therefore advises that the nose of the patient should be held by the fingers until general anæsthesia is produced, when there can no longer be any reflex action of the nasal mucous membranes anæsthetized like the rest of the body.—*The General Practitioner.*

OXYGEN ANTIDOTAL TO THE SEQUELAE OF ETHERIZATION.—The *American Therapist*, May, quotes Dr. Theophilus Parvin as being a convert to the views of Professor Landau, of Berlin as to the use of oxygen after ether anæsthesia. Dr. Parvin further observes that Landau is one of the few Berlin operators who prefers ether to chloroform as an anæsthetic; and he has found by a very large experience that, as soon as the operation is ended, if the patient immediately inhales oxygen freely for a few minutes, she does not subsequently suffer from headache or nausea and vomiting. The immediate effects of inhaling oxygen are: The dusky hue of the face disappears, and the pulse becomes fuller and slower; there is, too, a more rapid recovery of consciousness. He had many opportunities of witnessing these results at Dr.

Landau's hospital. The day subsequent to operations, Dr. Parvin several times visited these patients, at the doctor's request, asking them as to the removed, but it was considered advisable to keep her in the hospital, and death freedom from vomiting and pain, and the invariable reply was that they had neither.

VALUE OF SILVER AS AN ANTISEPTIC.—It may be some consolation to the silver men to learn that science has recently found an important use for silver, as announced at the Berlin "Chirurgencongress" by Crede, of Dresden. If a plate of metal is placed on a culture of staphylococcus aureus, a sterile zone soon forms around it, while the metal itself is affected by the secretions of the microbes, which produce lactic acid, forming a lactate of the metal. Thallium is the most powerful in this respect, and silver next, but as the lactates of thallium and of silver are very poisonous, Crede experimented chiefly with the carbonate of silver, impregnating with it silks, catgut and drains, and using it on gauze in a fine powder or in leaf sheets. It proved exceedingly effective as an antiseptic for wounds where a prolonged action was desired, while never causing pain nor irritating the tissues. He found it still antiseptic even after remaining on a wound eight days. He has also administered it hypodermically in five cases of acute infection, such as erysipelas, with success and no unpleasant results. In one case the solution contained one gram of lactate of silver. He speaks from seven months' experience.—*Semaine Medicale* June 3.

TUMORS OF THE SUPERIOR MAXILLARY.—These growths are often very insidious in onset, and may be far advanced before the patient is aware of their presence. They commonly commence in cavities quite inaccessible to exploration, and are only manifest when they begin to encroach on the skin or mucous membrane. In all cases in which a deep-seated tumor of the superior maxillary is suspected, the nasal passages, the vault of the palate, the pharynx and post-nasal space alike should be carefully explored. When the configuration has altered and the osseous walls impinge, by the use of the needle it will, be found that the bone has become more vascular and is much more friable than normal. From the prognostic point of view, sarcomata with small cells are the most malignant; those with intermediate, hyaline substance are less so; the fibro-sarcoma with giant cells the least. The endotheliomata progress slowly and often undergo cystic changes, and are but slightly malignant. Epitheliomata here are no less malignant than sarcoma.—M. HAMMER, in *Gazette Hebdomadaire de Medecine et de Chirurgie*.

A CASE OF INTEREST.—On May 27, at St. Bartholomew's Hospital, Mr. Samuel Langham held an inquiry with reference to the death of Rosina Elizabeth Foster, aged 14½ years, a box-maker, lately living at 27 Shaftesbury Place, Aldersgate Street. Sarah Ann Foster, the mother, stated that for some weeks the diseased had suffered terrible pain through the decay of a bad tooth. On Monday week she was so ill that she went to the hospital, with the intention of having the tooth extracted. She was detained in the hospital, and the following day witness heard she was dead. Dr. John Michel, house physician, stated that deceased was placed under gas and the tooth satisfactorily

took place very suddenly the following day. The autopsy showed that death was due to inflammation of the brain, of very rapid development, but whether it was caused through the operation or the effect of the gas was uncertain, although he did not think so. Several of the hospital physicians saw the deceased just before her death, but not one of them could diagnose the case, and inflammation of the brain was not at all visible during life. It was the most extraordinary case that had ever come under the notice of the hospital staff. The general impression of all was that the inflammation was not set up by the tooth, but there was absolutely nothing to show any other cause. The jury returned a verdict "That the deceased died from inflammation of the brain, but how set up the evidence failed to show."—*The Morning*.

Obituary.

DIED.—At Riverpoint, R. I., June 9th, 1896, Dr. C. W. Spaulding, in the 82nd year of his age.

Dr. Christopher W. Spaulding was born March 15th, 1814, in Rhode Island, of Scotch origin. His ancestors were prominent in the Revolutionary war.

Dr. Spaulding received a common school education. In 1840 he removed from his native State to New York State. In the same year he began his professional studies and received the Degree of Doctor of Dental Surgery in 1851, and that of Doctor of Medicine in 1869.

In 1847-48, Dr. Spaulding spent a year in Savannah, Ga. In 1849 he removed from Ithaca, N. Y., to St. Louis, where he resided for many years.

He took a leading part in the organization of the Western Dental Society in 1851, and has been prominently identified with the American, several State and City Associations, and has been actively engaged in every good work which would tend to elevate the profession of his choice.

He was also an ardent advocate of the Homœopathic School of remedies and was very successful in their administration.

In 1838 Dr. Spaulding married Miss Cornelia Anna Erb, also of revolutionary stock. Of this union there is one son, Dr. Jno. H. Spaulding, who succeeded to his father's practice in this city.

Dr. Spaulding and wife, whose death preceded his over a year and a half, removed to Rhode Island in August, 1890, to spend their declining years in the State of their nativity.

In the death of Dr. Spaulding we have lost an earnest and faithful laborer in the healing art, and be it

Resolved, That a memorial page be set aside in the Society's Transactions and a copy furnished the journals for publication.

H. J. MCKELLOPS,

WM. N. MORRISON,

J. B. NEWBY.

Committee of St. Louis Dental Society.

St. Louis, Mo., June 19th, 1896.

The Dental Digest.

Vol. II.

CHICAGO, AUGUST, 1896.

No. 8.

Original Contributions.

PYORRHŒA ALVEOLARIS OR RIGGS' DISEASE. ETIOLOGY, PATHOLOGY, CHARACTERISTICS, TREATMENT.

BY JUNIUS E. CRAVENS, D.D.S., INDIANAPOLIS, IND., READ AT THE TWENTY-SIXTH ANNUAL MEETING OF THE KENTUCKY STATE DENTAL ASSOCIATION, AT LOUISVILLE, JUNE 16-18, 1896.

It affords me pleasure to declare to the dental and medical professions that what is known as Riggs' disease, or *pyorrhœa alveolaris*, is curable; not occasionally and merely accidentally, as has been its history, but systematically and by well defined procedure; that it is quite as amenable to proper treatment as any other form of periosteal lesion; that no other chronic inflammation of any tissue responds more favorably and promptly to positive and thorough surgical practice.

From various observable points in connection with this disease it is fairly doubtful that it is a strictly dental disease. On the contrary there is much to indicate that the teeth are merely involved incidentally; the pericementum involved in "pockets" of *pyorrhœa alveolaris* is seldom if ever found to be congested—when affected teeth are extracted. In the progress of this disease the only tissue really destroyed is alveolar process, and that local to the alveolus or socket, most frequently and extensively in the masses separating the sockets.

With the exception of one, all the names applied to this disease indicate nothing in reference to dental tissues, and while it must be dignified as a distinct disease it is only a *periosteitis* with concomitant osteitis. According to my deductions I have advanced the

name of *alveolar periosteitis* as proper and fitting for this affection. There is not always pyorrhœa in these cases and sometimes pus cannot be easily demonstrated.

The causes, pathology and diagnosis of periosteitis are so closely applicable to what is called pyorrhœa alveolaris, that doubtless you would be interested, if not instructed, by a presentation of some conspicuous parallels. In the "Reference Hand-Book of the Medical Sciences" there is a chapter devoted to periosteitis, osteitis, etc., by Dr. R. H. M. Dawbarn, from which, and from "Greene's Pathology and Morbid Anatomy," I shall offer some quotations, to which I invite your attention, as applicable to the facts of this disease that has baffled the best efforts of hand and head in our profession for a century. Periosteitis operates either to destroy or build up, which shows it to be a true inflammation; this double character or activity should be held in mind by the dental practitioner who essays to treat pyorrhœa alveolaris, as it plays a very conspicuous part in what I have characterized as the "tragedy of cure." On this latter point Dawbarn says: "Chronic, non-infective periosteitis may be either fibrous or ossifying. In the former (fibrous) there is much increase in the amount of connective tissue, and the thickened membrane adheres unusually closely to the bone; in the latter (ossifying) we have as a result an ossific deposit." To apply this statement to the facts of Riggs' disease, we may invade the socket, where we find a mass of connective tissue, highly vascular, lining the "pocket" supposed to be pyorrhous. This mass of connective tissue is the apparatus of destruction, or of repair, as the case may be; its existence is a clinical fact that becomes familiar to those who operate in the alveoli affected by this disease. The mass of soft tissue as we always discover it, is the organ of destruction by which the socket is eventually destroyed and the tooth lost; its action will continue the same so long as the mass remains undisturbed. The parallel for this in periosteitis is to be found in the following statement by Dawbarn: "In periosteitis and rarefying osteitis, the absorption of bone is thought by some pathologists to be caused by the presence of certain large, multi-nucleated cells, the myeloplaxes of Robin, called, from this idea—osteoclasts. . . . Other pathologists disbelieve that these large cells possess any such power, and attribute the absorption to the *new granulation tissue* always present in these cases and lying in contact with the bone."

The following statement in Greene's Pathology is particularly applicable to the spongy bone of the alveolar ridge: "The mildest form (of osteitis) described, is that in which granulation tissue is produced. This occurs much oftener in cancellous than in compact bone."

Dawbarn says that, "It is of little clinical value to class inflammations of bone into osteitis, osteomyelitis and periosteitis from an anatomical standpoint, since primary periosteitis, with exception of the traumatic and syphilitic varieties, is very rarely observed." Also, that periosteitis and osteitis are concomitant, we have Greene's statement that, "Periosteitis implies that the periosteum is inflamed, but the superficial layers of the bone always suffer too."

According to my observation, the primary inflammation in Riggs' disease occurs in the periosteum on the alveolar ridge, about the orifice of the tooth socket; for convenience and exactness I have called this primary condition *orbicular periosteitis*, the visible indication being that known as gingivitis. For a parallel for this primary inflammation, in periosteitis in other localities, Greene gives the following: "Inflammation of bone always originates in the vascular structures, the periosteum and medulla."

As to progress of pyorrhœa alveolaris, orbicular periosteitis having set up on the ridge, we would first have gingivitis; from a comparatively simple and harmless gingivitis the periosteitis may be extended into the socket; then will arise the conditions that constitute what is called pyorrhœa alveolaris, or Riggs' disease.

The causes of periosteitis are numerous and well known generally, but occasionally no cause is discoverable. The causes of Riggs' disease have been subject to much disputation, but I have adhered to the proposition that the origin is local always and the influence of the disease is not extended beyond its own socket, except such pernicious effects as may be anticipated from exuding pus which passes into the stomach. Dr. Dawbarn gives a series of causes of periosteitis and osteitis, which are equally applicable to pyorrhœa alveolaris, as doubtless you will recognize as I read them, as follows: "Inflammation of bone may be induced by simple traumatism, . . . by extension from a periosteitis, by extension from arthritis, by exposure to cold, or to action of certain poisons, as phosphorus, mercury, syphilis; by pressure, by eruptive fevers, typhoid possibly acting as a primary and certainly as a predisposing cause." Of

these causes probably the most frequent to occur in the mouth is that of simple traumatism, the little woundings from inadvertent thrusts with wooden toothpicks—no seamstress hesitates to fill her mouth with pins and needles and many use them for picks; inadvertent laceration of the gum at the cervix of a tooth, particularly between the teeth, may set up an inflammation that, finally being extended to the socket, results in pyorrhœa alveolaris. Speaking of periosteitis arising from traumatism, Dawbarn says: "Periosteitis may originate from traumatism either simple or compound, and in character may be *simple* [aseptic] or *septic* from the presence of micro-organisms." Thus we discover the causes of osteitis and periosteitis and pyorrhœa alveolaris to be practically identical as applied in the mouth according to probabilities.

The casualties to the gum most commonly noted, and which are all sufficient to induce periosteal inflammation, are dam-clamps, which rarely can be adjusted so as to do no violence to the gum—even protracted pressure incident to tedious contour operations may result in the establishment of periosteitis in the cervical region; also, there are impinging ligatures; badly adjusted regulating apparatus; ill-fitting plates of teeth; awkward thrusts and slips of instruments, often none too clean, in the hands of the dentist, often none too clean; splinters from wooden toothpicks, etc. The list of oral accidents is endless.

Gingivitis may endure for a long time before finally invading the alveolus, and thus the cause of the resultant Riggs' disease may be lost. It may be possible that what we recognize as aggravated gingivitis is due to a "simple" or "aseptic" periosteitis, while that which is "septic" is responsible for *extension* to the sockets. In either case the condition is strictly local and "non-infective." Tillmann's later researches advance the idea that the bone in cases of osteitis and periosteitis, etc., is dissolved away by the carbonic acid contained in the blood, which is present in the "new granulation tissues." Pyorrhœa alveolaris can not be hereditary, but a condition of tissues may be inherited that would tend to the establishment of this disease, just as a natural weakness of chest and lungs may eventually permit development of consumption.

As to treatment, the first step is to remove *all* calculus from affected roots and lacerate or even tear away the "granulation tissue" within the "pocket"; the first or surgical operation should be closed

by douching the "pocket" with an astringent stimulant of acidulated nature, for which I have found nothing equal to dilute sulfuric acid. After a sufficient time has elapsed for granulations of repair to be well set up, the case should be purified and stimulated, and flooded with an astringent and stimulant of a more pronounced and permanent effect than sulfuric acid, and possibly of germicidal properties. For this latter purpose I have found a 10 per cent solution of nitrate of silver to be most effective. The discoloration of the teeth and fillings may be removed after all treatment has terminated.

As my system of treatment is based on a conception that Riggs' disease or pyorrhœa alveolaris is a periosteitis, my conception of a cure demands establishment of *scar tissue*; apropos, a statement from Greene's Pathology may be considered, as follows: ("Osteitis,") "The mildest form described is that in which granulation tissue is produced. This occurs much oftener in cancellous than in compact bone. . . . In a very early case absorption might occur, and regeneration make good any loss. But, when once marked destruction of bone has occurred, *scar tissue must form and ossify* if a cure is to be effected."

In conclusion, I will state that my quotations are merely extract scraps picked out here and there to fit the case, because the mass of matter from which these were culled pertains to the general subject of periosteitis, osteitis and osteomyelitis, and whole statements do not apply to pyorrhœa alveolaris or alveolar periosteitis, which the authorities given have never considered, although Greene's work is used extensively as a text book in schools of dentistry.

LOWER PLATES.

BY J. F. FRIBLEY, D.D.S., DECATUR, ILL.

Of all the departments of dentistry in which the "rank and file dentist" of to-day is called upon to do work, perhaps prosthetic dentistry is the most difficult and unsatisfactory. This is due largely to distaste for the work, drudgery of details, modification of type of subject and non-appreciation of good work by the public in general, caused by the cheap substitutes for dental work offered by quack dentists in the columns of our newspapers.

The dentist who can make an artificial denture for the lower jaw

which will subserve the purpose for which the lost dental organs were used, to the extent that the patient feels a sense of satisfaction and gratification in the wearing of it, is truly a very remarkable and ingenious person.

I have, like others, had some unsatisfactory experiences along this line and am convinced of the fact that, "as a rule, we learn more from our failures than our successes."

However, I have but little to say about lower cases where the teeth are all out, except to offer one method I have of taking impressions when the ridge is hardly perceptible, and the muscular attachments are so near together on the top of the ridge that there is hardly a line of space where the plate could rest undisturbed by the action of the muscles in movements of the jaw and in mastication. In such cases I exercise care in taking the impression, having the plaster not too thick, and just as soon as the cup can be inverted without the plaster dropping out I at once put it in place in the mouth, requesting the patient to move the jaw as in the process of mastication, and being careful to hold the cup firmly when once in place and to follow each movement.

This is kept up until the plaster is of a putty-like consistency. Then, of course, the jaw can come to rest, as there can be nothing gained by keeping up the movement.

After removing the impression from the mouth in time there are to be seen small grooves, depressions and elevations, which correspond exactly to the muscles, depressions and elevations of the ridge of the jaw, and when the plate is made it will fit perfectly and not be displaced during the process of mastication or in other movements of the jaw. In partial lowers I use the same precaution in taking the impression as in full cases where the same conditions exist.

Now, I wish to give a description and process of making a lower partial plate when the posterior teeth are out on both sides.

It consists of a plate with a clasp on the buccal surface only, and a swaged aluminum band vulcanized into the rubber which attach the posterior teeth. After taking an impression I fill with metal (moldine), being careful to get an exact copy of the lingual surfaces of the remaining anterior teeth and the gums and gum margins. Then I make a counter die and swage an aluminum band to fit the lingual surfaces, having points of aluminum fitting into the interproximal spaces—this is of the utmost importance. The ends of the

band should extend far enough back into the rubber on either side to give a firm attachment.

Then fit a band of clasp metal to the buccal surface of the teeth, proximating the denture on either side, and having the inside end of the clasp to fit and extend around the distal surface of the tooth till it touches the aluminum band and fit up to it.

The aluminum band or strip which fits the lingual surfaces of the teeth intact should be tempered to make it springy, and when the plate is pushed to place the points of the band drop into the interproximal spaces, and, with the clasps on the outside of the teeth next to the artificial denture, it makes a very comfortable and well adapted plate.

CARE OF THE TEETH IN CHILDHOOD.

BY DR. W. E. GRANT, LOUISVILLE, KY., READ AT THE TWENTY-SIXTH ANNUAL MEETING OF THE KENTUCKY STATE DENTAL ASSOCIATION AT
LOUISVILLE, JUNE 16-18, 1896.

The responsibility of the care of teeth in childhood should be deeply felt by each member of our profession and every heart should be stirred by the pathetic cry for advice and aid. No other branch of our professional duties requires so far an insight into the future and such careful reasoning as does this one. I had hoped that some member would present a paper on the care of mothers during pregnancy, and instruction of mothers and nurses regarding proper care of the infant's gums and teeth. The general medical practitioners and nurses are neglectful of their trusts at this important period. The general practitioner has so many cares that he is likely to overlook this one, while mothers and nurses rely almost entirely on him for instruction. The general impression is that the duty of the dentist is to care for the teeth after they have appeared, so that when he is called in it is too late. It has been stated that three-fourths of the deaths of infants under two and one-half years of age are caused by complications arising from their teeth. These little ones should not be receptacles for drugs, but should receive other attention—plenty of out-door air and sunlight, special massage of the mouth during dentition and a frequent use of the lancet over the points of tension. The mother should be taught to see the importance of nursing her child. Mother's milk is best, good fresh

cow's milk is second. The mother or nurse should frequently rub the ridge with thumb and finger, endeavoring to expand the arch in the direction of natural development.

The cases are, however, most frequently met in the office in children of from three to twelve years of age, and I desire to draw your attention more especially to the modes of practice in these cases.

Children's teeth should be treated in a humane manner. Each case must be understood and a careful and comprehensive diagnosis should be made. After the practitioner has ascertained what is needed in the particular instance he should proceed to gain the confidence of the little patient. Let him proceed slowly, doing one little thing after another, relieving pain when it is possible, until the child looks upon him as a true friend. A soothing manner should be adopted and operations should be performed as quickly as possible. In a short time his patience will receive a full reward, for he will be surprised at the quiet endurance that will be shown, even in painful operations.

We should begin early with the deciduous teeth and aim to keep them constantly under our care. The parents should be instructed to send their children to the family practitioner at least every six months. Except in rare instances deciduous teeth should not be extracted until absorption has been completed and nature has practically thrown them off, or, failing to do so, demands assistance. It is well known that in the alveolar ridge, as in a stone arch, the removal of one part allows the rest to fall in, and that when a tooth has been prematurely extracted there is less room for the eruption of the permanent one in its place. The incoming tooth has to overcome not only this difficulty, but is also deprived of the nourishment it should receive in the decalcification going on about it. The deciduous teeth are not very sensitive until about the fourth year, when decalcification begins, after which the roots have jagged, sharp points which may be the source of trouble. Mothers should be advised of these facts so that they may restrain their children from crushing hard substances in the mouth. Nuts and cheap candies are very injurious in this respect.

Operations should be begun before decalcification sets in if possible, or as soon afterward as the necessity appears. Cavities are more satisfactorily prepared and the operation is accomplished in less time by the use of sharp hand instruments than with the dental

engine. The patient has less dread of the operation, especially if the excavation reaches near the pulp. It is not necessary that the cavities be prepared with as much care as in permanent teeth, since the fillings are to serve but a short time. But the pulp should never be destroyed. The reason is plain, as it is a very difficult matter to remove the dead pulp, and even if absorption has not set in at the time of the operation, it will soon do so and give rise to complications hard to combat. If the pulp is not exposed do not expose it by excavation. Use a germicide on the remaining decay and fill over it. If the pulp is exposed the cavity should be made as clean as possible by thoroughly washing with warm water, drying and wiping out with carbolic acid. If there is but a slight exposure it is well to use a drop of chloro-percha over the exposed point, and to press lightly over this a small pellet of gutta-percha which has been warmed on the heater, filling in above with a thin mixture of cement until the cavity is entirely filled. But if the exposure is larger the pulp should be capped with a mixture composed of two parts of oil of cloves and one part of a preparation of carbolic acid and creosote in equal quantities, the whole being brought to a thick consistency with powdered iodoform. This cap should be pressed into place with pellets of cotton and the excess of the liquid constituents of the mixture should be removed in the same manner. It should then be covered with a thin piece of blotter, or paper from the gold foil book, upon which the filling should be completed with thin cement as formerly.

Much has been said about pulpless deciduous teeth and the modes of treating them. This subject is certainly one which requires most careful study. The conditions as they present themselves are extremely hard to overcome. In the first place such teeth cannot be properly cleansed, and much decayed matter, which may give future trouble, must be left. Then the fact that absorption begins at the root at an early period, enlarging the apex and shortening the root, makes it impossible to fill them with permanent material. Resort must therefore be had to antiseptic dressings. After the roots have been thoroughly cleansed with instruments and warm water they may be filled with powdered iodoform, mixed with campho-phenique, the mixture being well pumped in. Pellets of bibulous paper or cotton should be placed over this dressing and the filling completed with cement or gutta-percha. This mode of treatment

gives but little trouble and obviates the necessity of opening into the pulp cavity from the buccal side, as has been suggested. Very few teeth, less than 5 per cent of them, when treated in this manner, produce after-trouble sufficient to demand that operation.

I here recall a particular case of a patient under three years of age, in which there were eight teeth requiring fillings, and of the eight six were abscessed. I filled these in the manner suggested, and although the operation was performed more than eight months ago I see no signs of further trouble.

Practitioners differ as to the materials to be used, and certainly one ought not to limit himself to any one material. Tin-foil, copper amalgam, gutta-percha and cement are most commonly used. Tin-foil is not used now as much as formerly. Without a doubt it has some value as a tooth preserver, but it is objectionable, as it requires too much time in manipulation and too great a pressure in adapting it to the cavity. I have had little practical experience with copper amalgam and will not speak of it in this connection. Gutta-percha is of value as a non-conductor and in approximal cavities of molars, but it is objectionable because the cavity cannot be kept sufficiently dry and it requires too much pressure in adaptation. In far the greater number of cases cement is preferable to any of these. A tenacious, quick-setting cement has several desirable qualities for this class of cases. It can be mixed thin, it is easily worked, and during its existence it preserves the tooth admirably. It is especially serviceable on the labial and crown surfaces, where there is but little decay, or where the little ones will not permit an excavation.

A word about the second dentition. During this period the child needs careful and continuous attention. This is more especially true if the deciduous teeth have not received proper care, if there have been premature extractions or other abuse. At this period the child is old enough, with some watching, to carry out instructions. It is not generally known by the laity that it is not necessary for the child to lose any teeth before permanent ones are erupted. It is a frequent experience of the practitioner to have parents bring their children complaining of an aching tooth, only to discover that a permanent molar has been permitted to decay beyond repair. They do not know that the jaws have grown during these years and that the child is entitled to twelve more teeth in his permanent set than

he had in his temporary one. The practice of extracting the first molars just when the second ones are erupting is to be condemned, except in extreme cases.

The choice of materials for filling permanent teeth in children is a matter of importance. Gold or other hard fillings should not be used. The patient is generally worn out by the operation and it is seldom satisfactory to the practitioner. Amalgams discolor the teeth and do not aid in building up the structure. It is better to fill with cement and refill when necessary. This is especially valuable in correcting undeveloped molar crowns. After drying the fissures in the surface a thin mixture of cement may be run in and held in place with the finger until it has hardened. The occlusion may be raised in a similar manner when it is necessary to relieve an abscessed tooth.

The nerves in these permanent teeth should be carefully guarded and on no account destroyed until root calcification has been completed.

The subject is a broad one, reaching on the one hand to approved methods of treatment and on the other to the daily habits of the patient. Many deformities are caused during this period against which the dentist should ever strive to warn his people. The bad habits of lip-sucking, mouth-breathing, and thumb and finger sucking, are especially injurious. I have recently seen two cases of grave deformity resulting from the habit of thumb-sucking, for which the mothers were to blame, because they permitted their children to go to sleep in this way. One of these cases was of a man about thirty years of age. He had persisted in the habit until he was quite a large boy and after that, until he was more than twelve years of age, he would unconsciously go to sleep in this manner. When he presented himself to me I found that, although all the teeth were present, none of them except the wisdom tooth, the second molar, and the distal side of the first molar, came into apposition in such a way that he could masticate. The other case is of a boy, about thirteen years of age, and is not so extreme as the first mentioned, although the superior incisors are considerably out of line and the inferior ones have been forced slightly inward. I hope to correct this latter case by regulating, but did not think it would be advisable to undertake the former.

I trust the profession will feel the importance of this subject, and,

though it would require many more pages to do it justice, I leave it, hoping that the varied discussions which may be brought out will be of service to us all.

THE GUMS.

BY DR. E. M. KETTIG, LOUISVILLE, READ AT THE TWENTY-SIXTH ANNUAL MEETING
OF THE KENTUCKY STATE DENTAL ASSOCIATION, AT LOUISVILLE,

JUNE 16-18, 1896.

The motive that prompted the writing of this short paper was brought about by a combination of circumstances, which had often struck me as peculiar, viz., that we, who are always ready to do all in our power for the life and preservation of the dental organs, pay so little attention to the health of the gums. We all know it to be a fact, that we will spend weeks and months in restoring the teeth to a healthy condition, and yet will absolutely neglect the gums, except perhaps to clean the teeth and advise the use of a mouth-wash.

Many of our patients say—"Doctor, my gums are tender and bleed at the slightest touch, and I cannot brush my teeth because my gums bleed so freely," with other like expressions, and then ask what they must do to remedy the trouble. To many of us questions about, and the conditions of, the soft tissues of the mouth, and especially the gums, as a rule do not give very deep concern, and we usually put off our patients with some evasive answer—"That is only temporary, they will get all right again; anyone's gums bleed once in a while." Some of us do not stop to think that upon the general health and hygiene of the oral cavity largely depend the health and usefulness of the dental organs, and that many diseased conditions of the teeth are the direct result of pathological conditions of the surrounding soft tissues.

The word "gums," generally used in the plural by the laity, is a term denoting a certain tissue found only in the mouth, surrounding the teeth and as a covering for the palate and alveolar processes. In no other part of the body do we find similar tissue, and it is distinct and separate, in the sense that the teeth are *sui generis*. With the teeth it is contiguous, while with the mucous membrane of the cheeks and fauces, and membrane about the roots of the teeth, its relationship is one of continuity.

It is not affected by diseases of the teeth directly, but indirectly assumes alarming pathological conditions through the periosteal tissue and irritations residing in the surrounding mucous membranes. Inflammation of the gums is correctly called *ulitis*, but according to our dictionaries it is synonymous with *gingivitis*. The former word is of Greek origin, while *gingivitis* is from the Latin, and when we add the Greek termination *itis* I think we use the word incorrectly. We might compromise the matter by using the word *ulitis* in describing general inflammation of the gums, while *gingivitis* could be confined closely to express the free margins surrounding the teeth. In other words, if there were no teeth in the mouth we could not have a case of *gingivitis*, for there would be no free margins, but it would all be called *ulitis*.

It is not the object of this paper to point out the many pathological conditions of the gums other than to treat of that common complaint of our patients about their gums bleeding. The gums in a healthy condition should be pink in color and not red, as we frequently find them. When sound they will stand much abuse without bleeding and rapidly recover, even from actual injury, without the usual inflammation accompanying the reception of wounds in other soft parts of the body. So far as I am able to judge there are two causes which lead up to the condition mentioned. The first and most important is improper hygiene of the oral cavity. If the teeth were in a thoroughly clean condition the gums in many cases would never be inflamed. The second cause is the too frequent use of certain articles in or with our food. I refer especially to the condiments, such as mustard, salt, pepper, vinegar, etc., and I believe the whole American people season their food too highly. The one article, generally supposed to be harmless and used freely by nearly everyone, and which, in my opinion, has much to do with this form of inflammation, is salt. About the first thing most of us do when about to partake of a meal is to reach for the salt-cellar and liberally sprinkle salt over everything in sight. I fail to see why too much sodium chloride in the blood should not affect the gums, on the same principle that the mercurial combinations produce the condition known as *ptyalism*.

It is well known that in certain seasons of the year, especially in the spring, when we all get that tired feeling, and the blood is undergoing its normal changes to prepare itself for the summer's

heat, the system is in a highly sensitive condition, and mucous surfaces throughout the body are extremely prone to suffer from changes of the weather, producing colds, pneumonia and general inflammation of the air passages and head. Add to this a diet of spring vegetables and acid fruits, and we quickly charge our system with too much acid. I believe that people who are predisposed to gout, rheumatism and local manifestations of pyorrhœa, all suffer more at this time than at any other in the year. Is it not natural then for the gums to show signs of irritation and suffer from this sluggish condition of the circulation?

So far as treatment is concerned, we should clean the teeth thoroughly for the patient, and direct such treatment as will lead to a stimulation of the gums. If my patients tell me their gums bleed when they clean their teeth, I tell them to make them bleed all they can; not only to brush the teeth, but also give the gums a judicious brushing, and thus in a few days the tissues will be hardened and stimulated to a healthy condition. The prevalence to-day of all kinds of soft and pasty foods has much to do, through lack of friction, with causing bleeding of the gums. In the days gone by, when hard food and coarse bread were used, the gums were mechanically stimulated by friction and so did not bleed very often. An astringent mouth-wash, of which there are many, may also be prescribed with advantage.

CASE IN PRACTICE.

BY I. A. FREEMAN, D.D.S., CHICAGO.

The patient, a man about thirty-five years of age, presented himself for consultation. His trouble consisted in, what purported to be from the history gained, an abscessed superior lateral incisor, which from time to time became sore. This was followed by a tumor in the dome of the oral cavity, which continued to increase during periods of varied duration. At length it would disappear, or nearly so, to be followed by the same phenomena, after intervals of three or four months, longer or shorter.

At the time he came under my treatment the tumor was about the size of a large chestnut, and situated about midway between the line of the hard palate and the incisors, filling this

region, being fully three-quarters of an inch in diameter. Upon examination, fluctuation was distinctly manifested, but pulsation could not be detected. Reasoning from this that the tumor was the result of the dead lateral tooth, it was decided to open the sac and evacuate the pus. Proceeding to do this with a narrow curved bistoury, an incision the width of the blade was made. The flow of blood which followed this was so great that it caused a doubt to arise as to the correctness of the diagnosis, and the knife was withdrawn without ripping open the tumor, as was first intended, no pus following the removal. The gush of blood revealed the true nature of the tumor to be that of an aneurism, requiring very different treatment from that of an abscess. It was well that the sac was not laid open, for the hemorrhage was very profuse and difficult to control, with the small incision made. Had the walls of the sac been relieved of the tension caused by the pressure upon them from within, greater difficulty would have resulted.

The treatment in this instance, after using a solution of persulphate of iron, which did not prove a permanent coagulant, was to wipe the entire inner surface of the sac with equal parts of the tincture of iodine and a 95 per cent solution of carbolic acid. This proved a good and sufficient coagulant, which arrested the hemorrhage permanently. A cure resulted, as there has not been a recurrence of the trouble since the treatment, a period of nearly eighteen months.

A word of caution is not out of place here with regard to diagnosis in these cases. Introducing an aspirating needle, and drawing away some of the fluid contained in the sac, would usually give true conditions, even if pulsations could not be detected, as was the condition in this case.

FROG'S BLOOD.—A tale is told of a recent examination for the L.D.S.—we will not say where—in which one of the microscopic specimens was some frog's blood. Each student upon being shown the specimen described it with such rapidity and accuracy that the suspicions of the examiner were aroused. Feeling sure that an early candidate had informed the others what the specimen was, the examiner changed the slide, substituting some blood drawn from his own finger for that from the frog. The next candidate who presented himself was asked what was under the microscope. "Blood, sir," he replied with assurance. "What blood?" was the query. "It is the blood of a reptile, sir," he answered glibly. What the examiner's feelings were on hearing himself thus described, is not stated.—*Brit. Jour. Dent. Sc.*

Digests.

The Therapeutic Gazette for July, 1896.

"COCAINE AND COCAINISM." In the *Revue de Therapeutique Medico-Chirurgicale* of March 15, 1896, Sallard contributes a paper with this title, in which, after a brief historical resume of the influences of this drug upon various portions of the body, he proceeds to discuss the causes and symptoms of acute and chronic cocaine poisoning.

After stating that these untoward symptoms arise from subcutaneous and submucous injection, and from the use of large quantities upon the mucous membranes, particularly the urethra, he reminds us that Reclus, after a careful study, has concluded that on an average three grains of cocaine is the safe limit for anesthetic purposes. He also quotes an experience of Abadie's in which, after the injection of two-thirds of a grain of cocaine into an eyelid before an operation upon ectropion, the patient, aged 71 years, was seized with coma which lasted five hours, death ultimately occurring.

He also quotes an experience of Hugenschmidt, a celebrated dentist of Paris, who had a case of syncope lasting half an hour as the result of injecting ten drops of distilled water into the gum, thus illustrating the fact that injections under mucous membranes are capable of producing symptoms independently of the presence of cocaine. We believe this patient had already suffered from an attack of acute cocaine poisoning as the result of an injection. No case of death, however, has resulted after the absorption of a small amount of cocaine. There is one case, however, of a death from the injection into the urethra of a solution containing eight grains of this drug. The symptoms of acute poisoning under these circumstances are variable; sometimes they are simply those of a brief and fleeting vertigo; in other instances there is great excitation of the nervous system and a tingling in the extremities, with flushing of the skin followed by pallor; in other instances there are gesticulations and the patient passes into a condition of active talkative delirium. The latter symptoms are seen most frequently in women. In other instances the symptoms are those of marked depression. The

vertigo produces nausea or sensations similar to those of sea-sickness. There is marked feebleness and the patients are in a condition of semi-stupor. There may also be palpitation of the heart and some vomiting. There is marked pallor of the face, dilatation of the pupils, coldness of the extremities, and profuse sweating. Should convulsive symptoms come on, the intoxication is of course exceedingly profound and the prognosis grave. Convulsions are at first tonic, then clonic in character, sometimes resembling those of ordinary eclampsia. There is marked dyspnea, probably due to tetanic contractions of the respiratory muscles, and cyanosis is present from similar reasons, the cause of death being failure of respiration. The duration of these untoward symptoms produced by poisoning by cocaine is usually from one to two hours, although of course they may last for a longer period of time. Marked insomnia is very apt to follow these symptoms.

Sallard points out that Gauthier has stated that the administration of nitro-glycerin will greatly diminish any danger connected with the use of cocaine, and that Gluck has claimed that by the use of phenate of cocaine these symptoms can also be avoided.

Goesel has also proclaimed the advantages of tropacocaine as less likely to produce depression of the heart and other untoward symptoms.

Magitot, after stating that only very minute quantities should be used for producing local anesthesia under the skin or mucous membrane, adds that cocaine injections should never be used in neuro-pathic patients or in those suffering from cardiac disease or chronic affections of the respiratory passages. Great care should also be taken that it is not introduced into the veins. The patient who receives cocaine instillations should also always be placed in the horizontal position, save in those instances where in operations upon the mouth or head a semi-reclining or erect position is indispensable. Again, the greatest care should be used that the hydrochlorate of cocaine is absolutely pure and not mixed with other alkaloids which may possess a toxic influence. It is also well to use the instillations gradually rather than to inject them all at once. Magitot believes that cocaine possesses over chloroform and ether incontestable advantages.

Should symptoms of acute intoxication by cocaine develop in any case, the treatment is to place the patient flat on his back and use

slappings of the face and chest with hot and cold towels, ammonia by inhalation, and, if necessary, nitrate of amyl and hypodermic injections of ether and caffeine.

Chouppe has recommended that from one-third to one-half a grain of morphine be given hypodermically.

In regard to chronic intoxication by cocaine, or what has been called cocaino-mania, Sallard tells us that this habit is constantly increasing in France. The symptoms consist of loss of appetite, cardiac palpitation, headache and vertigo, finally followed by hallucinations or delusions. The following treatment is to be instituted:

In the first place, abstinence from cocaine is to be insisted upon under proper control of the attendants or in a hospital. The method of decreasing the cocaine need not be instantaneous, but it should be tapered off rapidly. Hydrotherapeutic measures designed to increase nutrition should be resorted to, and iron, quinine and arsenic, with heart tonics, such as caffeine and sparteine, should be employed. Chloral, trional or sulphonal may be employed to overcome insomnia, and the whole effort of the physician should be directed by means of appropriate exercise and a regular method of life to improving the patient's general nutrition.

The Ohio Dental Journal for July, 1896.

"A SAFE AND SERVICEABLE DETACHABLE BRIDGE-DENTURE," by B. J. Cigrand, B.S., D.D.S., Chicago; read at Southwestern Michigan Dental Society, 1896. The time was not long since when every dentist prided himself on the great span of the bridge. He did not consider himself scientific or practical unless he ventured to restore by means of bridge-work an entire upper denture and anchor same on three or four natural teeth, and he felt he was ancient if he produced a vulcanite, aluminum or gold denture. This, fellow-practitioners, was the status of prosthetic work a few years since. Time, that great assayist of all that is good and pure, has so refined and cleansed this department of dental prosthetics that only those who are familiar with the underlying principles of both the art and science can attain success. The days of "wild-cat bridge-work" have been relegated to the past, and only empirics and charlatans are still crying in its behalf. In our profession, as in all organized society, inclusive of governments, the conservative are the "pillar of strength," or the power behind the throne.

Bridge-work has advanced in theory only when it has advanced in practice. In its twofold evolution it absorbs from every available source whatever tends to broaden its art or perfect its science; it calls to its aid anatomy, chemistry, therapeutics, surgery, physiology, pathology, mechanics and sculpture, with each of which it is directly related, and the practitioners who have become most proficient and successful in the application are those who have mastered a full curriculum of dental science.

There will always be those who subscribe themselves among the radical and who are incessantly excusing the old—no matter how serviceable or appropriate—and inviting the recent, regardless of how ineffectual or disastrous.

In the first place, our knowledge of hygienic laws forbids us from recommending the large permanent bridge; secondly, our sad experience

Fig 3.



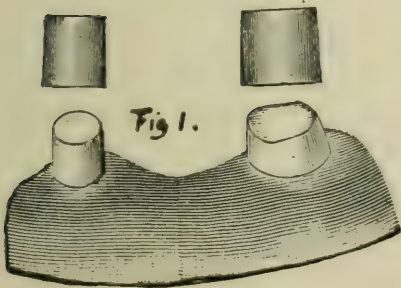
in repairing same has led us to a proper appreciation of the forces of mastication and occlusion, and we have learned that a strong bridge must be firmly anchored, and this latter point is the one which recent experiments and investigation have indelibly engraved upon our knowledge of practice.

Fig 2.



The evident advantages of continuous crown-work have stimulated the inventive genius of dental prosthesis to improve the methods and forms of construction and extend its application, thus permitting the versed practitioner to insert on a conservative basis a crowned substitute, which in respect to usefulness, appearance, durability and comfort compares well with nature's master stroke.

Fig 1.



Removable bridges are of late receiving much attention, and few matters pertaining to our professional service deserve greater notice. Of the varied evolution of the detachable bridge-venture I refrain from speaking, as in the description of the one I give you I will occupy some little of your valued time.

The method I recommend relates to buccal dentures, and since we are most frequently called upon to replace buccal teeth, you will readily recognize the deserved importance attached to this subject.

I have many of these dentures in service and am convinced that from the point of hygiene and comfort they are a decided success.

The buccal cases, to which I refer in particular, are those where the second bicuspid and first molar are missing, in either the upper or lower jaw, and where the adjoining teeth are possibly affected by decay. The method of construction is simple, and there are many cases to which the system is applicable. The case in question, an upper right, Fig. 1—trim down the first bicuspid, and, if necessary, devitalize same, and give it the shape of an ovoid pillar. Then proceed to treat the second molar likewise, shaping it into a cylindrical pillar. Then produce gold telescopes for these prepared pillars and cement them in position. Next construct a gold bicuspid and molar crown having a solid cusp and of such shape as to perfectly envelop the golden pillars. Position these crowns and take an impression and the maxillary antagonism, and proceed to swage a gold saddle connecting the two gold crowns as in Fig. 2. Now solder the saddle to the crowns and proceed to occlude the artificial second bicuspid and first molar (tipping same with gold cusps); wax same into proper position, and, after investing the case in the usual manner, join the entirety with gold solder; finish up as your judgment well directs.

If it is desired to construct the same detachable bridge-denture and employ vulcanite to hold the artificial substitutes, the process of construction is slightly different. In this event the earlier stages of construction are the same as already described, differing only subsequent to attaching the saddle to the two gold crowns. Several platinum pins are anchored in the gold bicuspid and molar crowns, and a bar of silver, acting as a truss, is soldered into a position as will not interfere with the setting up of the plain teeth.

After waxing up the case, flask it and pack pink rubber on the buccal surface, and maroon on the palatal; vulcanize and finish as a metallo-vulcanite denture.

The various modifications necessary to adapt this method to individual cases will readily present themselves to the conservative practitioners.

I do not wish to be understood as inferring that the method I

suggest is entirely original, for few inventions are, but I trust you will believe that this process of construction is a decided improvement over the methods in use heretofore. And if I shall have interested you in this mode of dental substitution and awakened a desire to encourage in your practice its application, I feel fully satisfied that my paper has accomplished all that was intended.

“PROGRESSIVE CALCIFICATION,” by Junius E. Cravens, D.D.S., Indianapolis; read at Mississippi Valley Dental Society, April, 1896. The irrepressible activity of the dental pulp as a builder should not be overlooked nor undervalued. The philosophy of nature does not require that completed dentine shall be nourished, any more than that enamel shall be similarly favored. When in the process of development dentine has attained a maximum or extent for practical purposes, *regular* activity of the odontoblasts is at an end—all subsequent activity of these elements is secondary and *spasmodic*, regional, responsive only to special excitation induced by irritation of external source. All secondary activity of odontoblasts results only in secondary deposits which always are irregular and erratic in structure; probably the nearest approach to regularity in these is the fact of lamination, which merely shows eras of activity.

The form of secondary calcification most frequently met with is that known as secondary dentine, discoverable to some extent in canals and pulp chambers of most persons beyond maturity. Secondary dentine may be pretty evenly distributed over the walls of a pulp chamber or confined to a particular section of the wall, or appear in form of tumors or nodulations—more or less pedunculated—firmly attached to the cavity wall. The benefits and evils of secondary dentine are about evenly conferred and well mixed, i. e., neither is universal and absolute.

As already suggested, development of secondary dentine is due to specific irritation of external relation; consequently the greater formations occur on those parts of the wall of the pulp cavity nearest to or toward the source of irritation.

Activity of odontoblasts in secondary calcification may be manifested over a considerable portion of the surface of a pulp at once—provided the irritation were general—a condition most likely due to extreme temperatures or probable alternation of them. Whilst the odontoblasts are most actively engaged thus the individual probably

feels no discomfort, and the progress of deposition may be so slow as to require many years before producing noticeable effect; on the contrary, very extensive deposits may occur in a year or less time.

Secondary calcification is usually much more rapid than regular dentinification. Secondary dentine often occupies nearly all the pulp chamber, causing a reduction of the pulp until it merely exists in the canal in the root.

In rare instances nodules of calcific matter are found in the canals; this rarity, probably, is owing to a lowering of vital force in the pulp, thus restricting activity of the odontoblasts. There is another reason why odontoblasts within the root canals do not oftener resume spasmodic activity. They are not subject to external influences to the same extent as those within the crown of the tooth. Naturally a root is protected and may be said to have no external relations other than physiological.

A pulp canal is subject to two constrictions which may be called apical and coronal or cervical. The first constriction to be considered here is the coronal, located at the point at which the pulp enters the canal from the chamber; the coronal constriction doubtless is the secondary one. The coronal or secondary constriction is related to practice in an important degree. Every operator has experienced some difficulty in penetrating certain canals, because of a mass of secondary dentine that is found projected over the entrance to the canal, sometimes almost closing it. The removal of this obstruction often reveals a liberal canal beyond.

The coronal constriction is not due to external cause. It is developed in response to a natural demand to meet an emergency. When the dentine of the crown has attained a maximum thickness for practical purposes of a tooth, such as wear-and-tear and strength, the activity of the odontoblasts must be reduced and finally stopped, and this can be done only by lowering the vitality of the pulp itself, enfeebling but not destroying it. An external irritant of a pulp may be the stimulus of enough irritation of that organ to induce renewed activity of the odontoblasts immediately involved, for a time, but here as elsewhere spasmodic effort receives only spasmodic support; the supply of pabulum (building material) fluctuates with the wavering of the inflammation. Inflammation is high living, and if **extreme in a pulp, nutrition fails.**

The coronal constriction may be developed so rapidly and exten-

sively as to literally strangle the coronal portion of the pulp, and the dentist discovers a case that has died and given no sign.

But there are other secondary deposits to be observed before reaching the terminus of the canal; pulp nodules are oval or rounded bodies, frequently found in the substance of pulps, and having no connection whatever with the cavity wall or any other masses of secondary matter. Doubtless the same character of irritation that causes development of secondary dentine also stimulates formation of independent nodules, but in the latter the odontoblasts have no part, unless possibly one becoming separated from its associated bodies sinks into the substance of the pulp and becomes a nucleus around which accretion of lime salts occurs, from the superabundance drawn to the pulp by the mild irritation, and which the coronal constriction prevents being promptly returned to the general circulation. The process of nodulation within pulp tissue is analogous to that by which oysters and other bivalves construct pearls.

Nodules within pulp canals are much more rare than those in the coronal portion, nevertheless the writer has discovered several cases, one in particular, in which there were three small oval nodules in the same canal. The study of these nodular formations is certainly very interesting, and may be made profitable at least to the mind of he who studies them. Some specimens, when cut, show beautiful laminations, that mark periods of activity and repose in the process of secondary calcific deposition.

Going back to the pulp chamber, from which we wandered in the search for pearls, let us penetrate the tubuli of dentine for further discoveries of secondary lime deposits. Under stress of certain conditions the pulp fails to invest against encroachment by deposits within its cavity, but instead the embryoplastic filaments within the tubules, that may be affected by an irritant, permit or accomplish transmission of fluid to the peripheral loopings of the tubuli, the transmitted fluid containing the salts of lime in solution, the embryoplastic filaments possessing the power of osmosis. The salts are laid down in the tubules at their terminals first, solidifying them, as close to the irritant as possible; by gradually increasing inward this process results in a final solidification of a section of dentine that thenceforth is insensible, thus protecting the pulp from external irritation; this character of deposit is classed as obstructive calcifi-

cation and is in nearly every essential different from all other calcific deposits or formations in teeth. This obstructive action may be confined to a group of tubules that directly are affected by thermal irritation from a metallic filling, the visible evidences of this special deposit being demonstrated by a section of dentine lying between the cavity of decay and the pulp chamber; the differentiation of color and marked opacity of the solidified tract is easily notable without aid of magnifying apparatus.

Obstructive calcification often is general in a tooth, from some general irritation, and in senile abrasion is nearly always to be observed; thus we are enabled to account for the low sensibility of dentine of most of our aged patients and their non-amenability to ordinary toothache. A slow abrasion of any character will stimulate obstructive calcification. In all these obstructive measures nature acts solely on the defensive against outside influences, pulp nodules alone being erratic calcification.

There are no pulp dynamics capable of nourishing dentine that has become solidified by obstructive calcification; collateral saturation is insufficient.

Once more penetrating the root canal we discover another interesting differentiation in secondary calcification, known to practitioners as canal casts. From their appearance these differ considerably from other secondary formations and deposits named, although of the same constituency. The casts are formed within the canals, in apparently the same manner as the nodules, but are long, rod-like, and conform closely to the form of the canals in which they appear; this close conformation to the canals has given these deposits the name of *canal casts*. Some canal casts are quite solid, while others appear to be formed of fine crystals like asbestos; while mechanical adaptation sometimes enables a cast to hold tolerably well to the canal wall, they never are really attached. As in cases of pulp nodules the canal casts are independent and erratic formations, in which the odontoblasts have no interest.

It is supposed that the spongy casts are so because of rapid atrophy of the pulp in the canal, and lowering or expiring vitality in it, probably accomplished by cemental constriction of the apical end of the canal.

It is well known, or ought to be, that the apex of a tooth-root is always completed by cementum, if completed at all; and in this

cementum, always growing, we have a continuance of the process that I have called progressive calcification, that began with the appearance of stellate bodies in the enamel organ, and does not end, except in death of the pulp or extraction of the tooth. Even after death of a pulp, progressive development of cementum does not lose significance in its discontinuance, because as abrasion reduces articular value of a tooth, the additional laminations of cementum should be sufficient to maintain articulation, and usually will so long as the pulp remains alive; then we can understand that if there eventuate a failure of cementum development, it may become conspicuous in that failure alone.

The histories of the dental pulp and progressive calcification are written in the same page of events and must be read together, and reading them thus brings us to the following conclusions: (1) Time enough being given, the dental pulp inevitably must destroy itself or be obliterated by influence of progressive calcification. (2) From the stage of practical completion of a tooth the pulp labors toward self-destruction, to suicide by secondary deposition. (3) After practical completion (articulation) of a tooth, its tenure does not depend upon continued vitality of the pulp. (4) While unnecessary destruction of pulps should be discouraged, it is better to attain certainty of good results with pulpless canals than to wrestle with disappointing after-effects of attempted conservation of live pulps, therefore I have declared the following: (5) A pulp that can live without protection should be protected; pulps that cannot survive without protection were better destroyed.

The British Journal of Dental Science for July, 1896.

"THE EARLY TREATMENT OF CROWDED MOUTHS," by Mr. J. F. Colyer. Read before the Odontological Association of Great Britain. The first question I wish to lay before you to-night is this: Is it advisable to treat a crowded mouth directly such a condition in the future seems inevitable? Personally I think the earlier the treatment of a crowded mouth is commenced the better; for as time progresses the irregular position of the teeth becomes more fixed and more aggravated, and hence the case is more difficult to treat. But there is, I think, a stronger argument than this, namely, that if room is made for each tooth as it erupts, the case, by the time the succession of teeth is complete, simply resolves itself into the

treatment of either a crowded canine or second bicuspid, whichever tooth happens to erupt last; while, if on the other hand, we leave the treatment of the crowding until the succession of teeth is complete, we shall have to deal with a condition in which probably the whole of the six front teeth are involved, and the correction of which would be long and tedious. Personally I see no argument whatever against treating a crowded mouth directly such a condition is recognized.

The next point worthy of discussion is: What are the relative advantages of treatment by expansion and extraction? In considering this question there are three points which should be clearly kept in mind: (1) The great prevalency of dental caries; (2) the increasing tendency for the teeth to be lost at an early age through chronic periodontal mischief; (3) the fact that in the condition we are called upon to treat, nature is endeavoring to get sixteen teeth in the place where only fourteen, and in some cases twelve, can be accommodated.

Now, these points have the following bearings upon our treatment. They indicate: (1) That the method we adopt should tend, if possible, to reduce the tendency to dental caries; (2) that the movement of the teeth by mechanical methods should be avoided from these points of view—(i) in teeth moved by mechanical means there seems to be a predisposition to chronic periodontal trouble; (ii) all mechanical contrivances are liable to directly or indirectly cause caries of the teeth.

Let us now turn and see how expansion or extraction fulfil these objects. Taking expansion first we find that it does not tend to reduce the liability to caries, for by this method the pressure of the adjacent teeth on one another is if anything increased, and, secondly, expansion is a mechanical method, and the time during which plates have to be worn is somewhat considerable. There is also another point which is too frequently overlooked with expansion, namely, that the room gained is apparent and not real. A tooth when moved by mechanical means moves on its apex in a manner similar to the swing of a pendulum; in expansion we move a large number of teeth at once, forcing them in an outward direction. By this means the upper portion of the teeth, namely, the crowns, are made to occupy a greater arch, but the lower portion remain in practically the same crowded condition, hence the tendency for cases treated by expansion to relapse.

Another great disadvantage of expansion is to be found in the disarrangement of the bite which so frequently results, while in addition the very sloping direction into which the front teeth are often forced is decidedly unsightly.

Turning to extraction we find that (1) room is gained not only for the crowns, but also for the roots of the teeth. (2) The amount of mechanical treatment is lessened, and in many cases abolished. (3) The pressure on the teeth is relieved, and a certain amount of isolation obtained—a condition conducive to the prevention of caries. (4) The bite is less disarranged than with expansion. (5) The teeth invariably assume a better direction. To sum up, it seems that crowded teeth should be treated as far as possible by extraction.

Taking for granted that early interference is called for in the treatment of crowded mouths, the next point I should like to suggest for discussion is this: On what lines should we proceed with cases that come under notice? For simplicity of description I propose to divide this question under two headings. (1) Those cases where the first permanent molars are unsaveable. (2) Those cases where the first permanent molars are capable of being saved.

(1) *Cases where the first permanent molars are unsaveable.*—In these cases I have found good results to follow from a line of treatment somewhat similar to the following: The first permanent molars are filled or treated in the best manner possible, so as to retain them until the second permanent molars have erupted. The crowding of the upper and lower incisors is then relieved by the removal of the four temporary canines. If the teeth erupt the normal way the first and second bicuspid will come into a good position and we shall then have the following condition: the four incisors and the four bicuspid in a regular arch, with a greater or less space existing between the lateral incisor and the first bicuspid, so that the canine erupts just external to the arch; in other words, we shall have to deal with a fairly simple irregularity, namely, a canine high in the arch. To make room for the canines the first permanent molars should be removed directly the second permanent molars are fairly through the gum. A plate to hold back the second molars should then be inserted; this plate is made to cover the palate in such a way that it comes in contact with the palatal surfaces of the incisor teeth, while to the back of it are fixed half-round gold wires

which pass along the anterior surface of the second molars, the plate being quite free of the bicuspid. This form of plate is generally known as the Woodhouse plate and possesses this advantage: it retains the second molars in position, preventing them moving forward, while at the same time it allows the bicuspid to fall back, partly by the action of the bite and partly by the pressure of the canine tooth, so that many cases get quite well without any further mechanical treatment, a point of no small importance.

A line of treatment similar to that I have just indicated will naturally not be applicable to all cases, but it serves, I think, to illustrate the principle which we should adopt.

(2) *Cases where the first permanent molars are capable of being saved.*—This type of case is decidedly more satisfactory to deal with than the preceding. Our treatment should in the first instance be directed to the first permanent molars, these teeth if necessary being filled with fillings as permanent as possible. This accomplished space should be obtained by the removal of the unerupted first bicuspid. The operation consists in removing the deciduous first molar and then the bicuspid, and was first suggested by Mr. Tomes for the treatment of that irregularity of the lateral incisor where the mesial angle is tilted forward and directed toward the median line, and is, as you are aware, extremely difficult to correct if left until the permanent canine has erupted.

If a skull exhibiting this condition be examined it will be noticed that the irregularity of the lateral is produced by the permanent canine pressing on the end of the root of the lateral. To relieve this pressure there is but one method available, namely, to remove the bicuspid and so allow the canine to fall back. It may be argued by some that extraction of the temporary canine would be sufficient to remedy the condition of the lateral, but if a dried specimen be carefully studied it will be noticed that the removal of the temporary canine will not have the desired effect of giving room for the permanent canine.

In the cases, the photographs of which I propose to throw upon the screen, the operation has been performed for the treatment of various types of crowded mouths, and in one instance for the relief of what I considered to be a case of early superior protrusion. Of my nineteen cases I am able to show you twelve to-night; in the other seven I have been unable to retain trace of my patients.

In some of the cases the second bicuspid has not yet erupted, and such cases can hardly be said to be complete, but they are, I think, sufficiently advanced to show the effect of treatment. Before, however, placing these cases on the screen, it may be well to refer to the actual operation. First, an anesthetic should always be given, as the removal of the bicuspid is naturally attended by a good deal of pain, a point of great importance with children.

If we confine our attention to one side of the mouth at a time nitrous oxide is quite sufficient, but if it is desirable to move both bicuspid at one sitting then ether must be administered. The instrument I generally use for the removal of the teeth is a pair of Read's upper stump forceps with rather long blades. The temporary molar is first removed, and in attempting the extraction of the bicuspid the blades should be opened fairly wide; this is worthy of remembrance, for in my first cases I found a decided tendency not to keep them open sufficiently. The external blade, too, should be kept well outwards. It is well to advise the use of an antiseptic mouth-wash after removal, and if the extraction has been difficult the wound should be syringed out several times a day.

(Mr. Colyer then showed, by means of lantern slides, twelve cases in which the treatment by removal of the unerupted bicuspid had been carried out.) In concluding his remarks Mr. Colyer said:

An analysis of these cases will show that whenever the operation has been performed for simple crowding, the result obtained has been good. In one case, although the irregularity of the lateral has been remedied, there seems to be too much room, and it is questionable if the bicuspid should have been removed. In another case the crowding would, I think, have been better treated by the removal of the laterals. In the case showing early signs of superior protrusion, the result is on the whole good, and I think that in this class of irregularity the removal of the bicuspid at an early age is likely to be beneficial. Generally speaking, the form of treatment is a valuable one, and as time gives us experience we shall be better able to choose in what cases it can be best adopted.

"ORAL SURGERY," by Edmund W. Roughton, B.S., M.D. (Lond.), F.R.C.S. Eng. Parasitic Affections of the Mouth. Animal parasites have been observed in the mouth; cases of echinococcus, cysticercus, trichina spiralis and dracunculus (guinea-worm) have

been recorded, but they are so rare that it is only necessary to refer to them in passing.

The vegetable parasites are infinitely more common and important. It is well known that every mouth, whether healthy or diseased, contains an enormous number of bacteria, and that the fur on the tongue is composed almost entirely of minute vegetable organisms. It is also admitted that most of the inflammatory affections of the mouth already described are to a very great extent due to the action of micro-organisms.

But there are certain other conditions in which the growth of a vegetable parasite constitutes in itself the chief morbid feature apart from any effect it produces on the tissues of the mouth. These conditions will now be described.

Thrush. Thrush occurs most commonly in children who are brought up by hand, but it is sometimes met with in adults who are prostrated by serious diseases, such as typhoid fever, pneumonia, etc.

In children the disease is ushered in with general malaise which lasts a few hours or days; the mucous membrane of the mouth becomes redder than usual, and in a short time small white patches appear on the lips, cheeks and tongue, and, sometimes, on the gums. They are circular and at first discrete, looking like pieces of curd, but as they increase in size they coalesce, forming a continuous layer extending sometimes over the whole tongue, lips, cheeks, palate and tonsils. The disease may extend to the pharynx and œsophagus, but does not involve the larynx or trachea. At first the patches adhere closely to the mucous membrane, and can be detached only with difficulty, leaving uncovered deep red areas which bleed readily. After a day or two they become drier, of a yellower color and more readily detachable. Finally they assume a brownish tint and fall off spontaneously.

During the formation and extension of the patches the child feels ill; it refuses the bottle or the breast; the bowels are usually relaxed, the stools being green and offensive. The arms and buttocks become red and excoriated and patches resembling those in the mouth may form; they are due not to direct spread of the disease through the whole alimentary canal, but to inoculation of the sore places with spores contained in the fæces.

The course which the disease runs, and the severity of its effects upon the patient, depend upon the conditions by which the child is

surrounded. In private practice the disease is comparatively trivial, whereas in founding hospitals (especially in former times when the importance of cleanliness was underestimated) the disease has been attended with a high mortality, the children becoming exhausted by enteritis and continual diarrhœa.

A microscopic examination of the white patches shows them to be composed almost entirely of a fungus known as the *saccharomyces albicans* or *thrush fungus*. This organism was formerly known as *oidium albicans*, but recent experiments have shown that it is a bud-fungus, not a mold-fungus. The thrush-fungus consists of cells of various shapes, some being elongated and cylindrical, others oval or spherical, these latter being more abundant on the surface of the membrane; in the deeper parts of the membrane and in the epithelium the cells elongate into thick mycelial threads. The fungus attacks chiefly stratified epithelium; it very seldom attacks mucous membranes covered with cylindrical epithelium.

The fungus may gain access to the mouth in several ways. It may be inspired, it may be directly inoculated from the vagina during parturition, or it may be taken in with the food, especially with milk which has undergone partial fermentation. The disease very rarely occurs in children brought up at the breast with ordinary cleanliness.

The *treatment* of thrush is simple and effectual when the child is surrounded by proper hygienic conditions, but under other circumstances is difficult and unsatisfactory. All vessels and implements used for containing milk, or for feeding the child, must be thoroughly cleansed as soon as they have been used. The milk must be quite fresh and should be sterilized before use. If possible the child should be put to the breast of a healthy nurse. The patches of membrane should be detached with a soft rag dipped in weak Condyl's fluid. Borax may be used, but without the addition of syrup, as the latter aids the development of the fungus. In severe cases a weak solution of nitrate of silver (two grains to the ounce of distilled water) may be used to paint the patches twice a day, borax being frequently used in the intervals.

Nigrities or Black Tongue. In this condition a black patch forms on the dorsum of the tongue and slowly spreads. After lasting some time (a few weeks or months) it may disappear spontaneously.

It is due to the growth of a parasite (*Glossophyton*) probably closely allied as *Aspergillus nigricans*.

The affection does not give rise to any symptoms beyond a feeling of dryness in the mouth. It is usually discovered accidentally.

It should be treated by suitable antiparasitic remedies.

Pharyngomykosis benigna. This condition consists in the development of soft white spots or tubercles on the base of the tongue near the epiglottis, sometimes on the tonsils and pillars of the fauces. The spots consist of masses of *leptothrix buccalis* and other organisms.

They disappear spontaneously. No special treatment is necessary.

Stomatomykosis Sarcinæ. This condition occurs in wasting diseases, such as phthisis or protracted typhoid. It consists in the development of hoar-frost-like membranes on the tongue and soft palate, consisting of *sarcinæ*. It is very rare and does not call for special attention.

DISEASES OF THE TONGUE. In this section no attempt will be made to give a complete account of the diseases of the tongue. Only those conditions which are of interest and importance to the dental surgeon will be considered.

Ulcers of the Tongue. The tongue is subject to ulceration from many causes, some local, some constitutional. The frequency of ulceration of the tongue is to a great extent due to the soft structure of its mucous covering and to the many sources of irritation to which it is exposed. The various ulcers of the tongue are best classified according to their cause.

Simple Ulcers. Under this heading are usually included those ulcers which cannot be ascribed to any definite or clearly ascertainable cause; they are probably due to slight injury or irritation which has passed unnoticed. The best example of this class is seen in cases of chronic superficial glossitis where the surface of the tongue is divested of papillæ and covered by a thin bluish-white pellicle broken up into small areas by lines and fissures. In such cases ulcers are common on the center of the tongue, being due to sloughing of a small piece of the mucous membrane in the course of an acute attack of inflammation in the seat of old chronic inflammation or scar tissue. The ulcer thus produced soon assumes a chronic character having a smooth, red, glazed surface,

callous edges and an irregular or stellate outline. It often causes much pain, especially on taking hot food, and is a source of great inconvenience.

The treatment of these ulcers is difficult and unsatisfactory; they may be got to heal, but they have no sooner healed than they break out again, either in the same place or in another part of the tongue. All sources of irritation must be avoided; the food should be plain, soft and unirritating; alcohol and tobacco must be given up. Various local remedies may be tried in succession until the most suitable is discovered. Chromic acid solution (ten grains to the ounce) chlorate of potash gargle, honey and borax, and solution of tannic acid, or alum may be tried in turn. Nitrate of silver is often used, but it is seldom serviceable, indeed often harmful, especially when used in strong solutions.

Dyspeptic Ulcers usually occur on the tip of the tongue, but may extend some distance back toward the center. In some cases the tip and adjacent portion of the dorsum are red and raw, the condition being one of excoriation rather than actual ulceration; the filiform papillæ are absent, the fungiform papillæ looking larger than natural. Behind the excoriated area the tongue is thickly furred. In other cases definite ulcers result from the breaking of vesicles or pustules situated about the tip of the tongue. When they break they leave small, circular, well-defined ulcers with sharp-cut edges, varying in size from a pin's head to a split pea; their surface may be clean and red, or covered with a thin slough. They are very tender, and, as they are almost constantly in contact with the teeth, they occasion a good deal of pain and inconvenience. The treatment is in most cases limited to the administration of an aperient; they usually heal in a few days. If they are more obstinate or show a tendency to recur, the diet must be regulated, the bowels kept open, and the ulcers painted with chromic acid solution, or rinsed with chlorate of potash gargle.

Aphthous Ulcers occur particularly in children between the ages of six months and three years, often as a sequela of measles or scarlet fever. (See Aphthous Stomatitis.)

Traumatic Ulcers may follow a wound produced by the teeth or by any other cause, they usually heal readily and require no special treatment beyond cleanliness. The most important ulcer of this class is the *dental ulcer*. It is due to the continued rubbing and irri-

tation of a rough or carious tooth, or of a badly-fitting denture. It is always seen on the tip or edge of the tongue, never on the dorsum; it may vary much in character, being sometimes a mere crack or excoriation, at others a definite ulcer perhaps an inch in length. In the more acute cases the surface of the ulcer is covered with a shreddy slough, the edges are sharply cut and irregular as if eaten out, and the surrounding area is swollen, sodden and thickly furred. There is much pain, especially when the tongue is moved, the saliva is increased and the breath offensive. In more chronic cases there is not so much swelling around the ulcer, the edges are not so sharply cut, the surface is free from slough, and the subjective symptoms are much less intense, but the tissue upon which the ulcer rests is apt to become indurated, often to a considerable extent.

The *diagnosis* of the acute form of dental ulcer is not as a rule difficult. The rapid formation of the ulcer, the sloughy nature of its surface, the sodden condition of the surrounding parts, and the situation of the ulcer opposite a ragged tooth suffice to distinguish it from other ulcers. The diagnosis of the chronic form is much more difficult; it may be confounded with a primary syphilitic chancre, a gummatous, tubercular, or cancerous ulcer. The recognition of the primary syphilitic sore is fairly easy when it is suspected, but its extreme rarity renders it liable to be overlooked. A gummatous ulcer may usually be distinguished by its larger size, greater induration, deeper and fouler surface, and by the presence of other gummata and associated signs of past or present syphilis on the tongue or elsewhere. A tubercular ulcer may be distinguished by its greater depth, absence of induration and the presence of tubercles in the surrounding parts of the tongue, and of tubercular lesions of the lungs or larynx. The most difficult and important point in diagnosis is to distinguish between a chronic dental ulcer and the early stage of cancer of the tongue, and the difficulty is increased by the fact that a chronic dental ulcer may become cancerous, so that there is a period of transition in which a decided diagnosis is impossible. There are, however, certain points, a consideration of which will materially assist the diagnosis. They are the age and sex of the patient, the presence or absence of induration, and the microscopic characters of a scraping from the surface of the ulcer. Cancer of the tongue is extremely rare under thirty, therefore in a person below that age the question of diagnosis

between chronic dental ulcer and cancer can be easily settled. Unfortunately it is in older persons that the difficulty in diagnosis arises, and here age does not help. Cancer of the tongue is much more common in men than in women, but this fact is not of much assistance in deciding upon an individual case. The absence of induration may be considered to negative the diagnosis of cancer, but its presence may be due to either condition. If a scraping from a cancerous ulcer be examined under the microscope a large number of epithelial cells will be seen; they differ from those observed in health or from the surface of a simple ulcer; they vary greatly in size and shape; some are flattened scales, others rounded, oval, elongated with tapering ends, or flask-shaped; there are usually three or more large nuclei containing nucleoli as large as the nuclei of normal epithelium; sometimes typical cell-nests are discovered.

To sum up, it may be considered a safe, practical rule to regard every chronic, indurated ulcer of the tongue, in a person over forty years of age, as cancerous or likely to become so unless efficiently treated.

The treatment consists in removing the source of irritation; rough teeth should be smoothed down, carious ones filled or extracted, and artificial dentures "relieved" or laid aside for a time. If the ulcer is unhealthy and sloughy, and the tongue much furred, a brisk purge should be given and the mouth frequently rinsed with chlorate of potash gargle. In chronic cases, if the ulcer does not quickly heal after removal of the source of irritation, or if there be any suspicion that it is becoming malignant, it should be excised, and with it an area of a quarter of an inch of healthy tissue.

Mercurial Ulcers. Ulcers may form on the tongue during the course of mercurial stomatitis. They are usually shallow and irregular in shape and surrounded by a red areola. They are the result of sloughing of the mucous membrane, and usually portions of slough are seen covering the ulcers partly or completely.

"WHAT IS A PROFESSION?" by W. H. Waite, L.D.S.I., D.D.S., Phil. What are the distinctive characteristics of a profession? Wherein does it differ from a trade? A very simple suggestion may help us. In a trade transaction the public seek an article; in professional matters the public seek an individual. In trade the public can examine the article, estimate its value and decide for or against

it beforehand, whereas in a profession the public must confide in the individual, having only for its guidance the reputation and experience of the individual. In trade the individual is of small consequence, provided the article is genuine; but in a profession the individual is of the first importance—his knowledge, his skill, his character count for everything. In trade, finally, the public can be equally well served at any respectable establishment—the demand and the supply are for the most part uniform. In the professions there is infinite variety; identity is well nigh impossible, either in the matter requiring attention or in the individuals whose services are sought. The enumeration of these points is not arbitrary or artificial. There is no obscure or secondary purpose. We are striving after an answer to the query, What is a profession? All manner of unfair and grotesque inferences have been drawn from the facts just recited; but we have nothing to do with any conclusions save those which may elucidate the exact position of the professional man. Why is he called professional? Because he professes to understand, and he professes to be able to perform the duties pertaining to his specialty. He has no goods to exhibit for inspection or competition when he enters the arena, but he has to show that he possesses the knowledge, the skill and the character he professes. He must be taken very largely on trust, but when once he has demonstrated his capability his position is as well assured as anything mortal can be.

Assuming this definition to be just, let us proceed to inquire how far the practice of dental surgery comes within the limits laid down? Already we have admitted three essentials, viz: knowledge, skill, character. Our first postulate, therefore, is that dental practice demands an amount of knowledge not less important than that required in any other profession; intimate knowledge and general knowledge. Intimate knowledge of all the tissues found in the oral cavity and its associate parts; much of this is microscopical, and only to be obtained by considerable labor. Intimate knowledge of the process of development, together with the irregularities probable or possible. Intimate knowledge of the normal or abnormal conditions, morbid and pathological changes, to which these parts are liable. Intimate knowledge of the manifold methods of treatment, including a thorough acquaintance with the chemistry of the oral fluids, and the medicaments and materials employed. Intimate knowledge of the subject of anesthesia and the mode of administering various

anesthetics. Intimate knowledge of the multifarious instruments, appliances, etc., by help of which operative dentistry has risen to the rank of a fine art. And last, yet certainly not least, intimate knowledge of mechanics, particularly the mechanical action of the facial muscles, and the judicious construction of artificial substitutes. This intimate knowledge is indispensable to intelligent and successful practice; without it a man may practice, but he cannot hold place among professional men. Again, general knowledge is required; structural and functional anatomy, physiology, digestion, circulation, nutrition. General knowledge of those obscure nervous disorders which often involve dental suffering, but for which the dental organs are not wholly responsible; general knowledge of malignant and other growths liable to occur about the head and neck, and all and sundry diseases with which the dental organs may become complicated; general knowledge of chemistry, materia medica, metallurgy, etc.; in short, the scope of general knowledge cannot be defined. It will be observed we are confining our attention to professional knowledge. Intellectual culture need not be insisted on here; it goes without saying, the more a man has of it the better for him in any case. Now the question arises, What guarantee can the public obtain as to the knowledge of a dental practitioner? Much every way. By the provisions of the Dentists' act, no man can call himself dentist, dental surgeon, or the like, unless he is registered under the act; also, no man can now be registered until he has passed through a curriculum embracing all the subjects we have recited, and stood the test of a thorough examination by one of the licensing bodies.

Dental Practitioner and Advertiser for July, 1896.

"ARTIFICIAL DENTURES," Editorial. Young practitioners in dentistry are always exceedingly anxious concerning the fit or adaptation of their first artificial dentures, and when they do not prove to be satisfactory and are too easily displaced in practical use, the failure is ascribed to a lack of adaptation, another impression is taken and the plates remade. We have in previous numbers of this journal called attention to the great probability that the lack of success in many cases is due to mal-occlusion rather than to a poor fit. An upper plate is inserted in a mouth in which there are but the anterior lower teeth. No special provisions are made to secure a

direct occlusion, but the natural lower teeth are made to close against the lingual side of the artificial teeth, or the sloping surface of the plate. Of course such an inclined plane must force the denture forward until adhesion is lost, when it falls in the mouth.

If there are natural bicuspid and molars below, the artificial teeth may be so adjusted that they slide upon some projecting point, or the inclined surface of a natural tooth, and any force that is then used in mastication has the natural tendency to drive the denture out of its place, either posteriorly or anteriorly. Perhaps there is an inclined plane upon both sides, and the plate with a direct adhesive force of five or six pounds is expected to retain its place against an oblique energy of thirty or forty pounds.

Every dentist knows that in the natural denture no tooth falls into line exactly opposite another, but rather "breaks joints" with it, the first lower pre-molar shutting between the upper cuspid and the first upper pre-molar, this arrangement being preserved throughout. Each tooth in that case is prevented from sliding upon its antagonist, and is firmly held without effort. If cuspids or premolars were to occlude point to point, there would not be force enough in the jaws to prevent them from sliding either one way or the other. Therefore, in arranging artificial teeth, especial care should be taken to see that there are no inclined planes of occlusion, or if one is found to be unavoidable, another in the opposite direction should be arranged to counteract it.

An artificial tooth should never be arranged to bite directly upon another. That is, their vertical axes should never be in line. Perfect occlusion is impossible when this is the case, and their occluding surfaces must either be ground down flat or they will slide forward or backward. Each tooth must bite upon two opposite ones. The cusps are so fashioned that they naturally fall into place between the opposite teeth and thus interlock in a manner that prevents sliding when they are in contact.

Sometimes it is difficult to arrange this when artificial teeth occlude with natural ones, but it can always be secured, either by changing the arch of the artificial teeth, by leaving a space between them, or by carrying the center a little to one side. Of course when gum section teeth are used the spaces between them cannot be changed at will, and that is why good mastication cannot be as well secured with them as with single plain teeth. But the arch

or center can be so changed as to make occlusion comparatively good.

Another reason why artificial dentures are sometimes failures is that the parts representing the alveolus present to the muscles a convex instead of a plain or concave surface. When the lip must fall over a rounded contour the natural tendency of both the longitudinal and transverse fibers of the orbicularis oris muscle, and those of the others which blend with it, is to force the plate down. Let the surface of the plate that is under the lip be flat, the upper border not being filed or ground down to a knife edge.

The same rule should be followed in shaping the surfaces against which the lateral borders of the tongue rest. They should even be concave, that the tongue may lie easily in the space and assist in holding the denture in place. Much of the difficulty in speaking that sometimes follows the insertion of artificial teeth is due to the unnecessary thickness of the plate at the points representing the lingual alveolus over the roots of the pre-molars and molars. In making rubber plates too much material is used where it is not needed for strength, and the plate is thus rendered heavy, clumsy, inartistic and difficult of retention.

Many dentists, especially those who are young in practice, wax their rubber cases too far toward the points of plain teeth. Those that are just about long enough to reach to the alveolar ridge should be selected, and then upon their labial aspect they should be waxed only high enough barely to engage their external base. It is much easier to finish them, they look far more artistic, and they are lighter. The incisive and canine fossæ should be well marked to afford a proper lodging place for the decussating fibers of the buccinator and for the longitudinal fibers of the levator muscles. The margin in these regions must be cut down, while the canine eminence is marked by carrying it higher in that locality. When these rules are observed the plate will not only be more artistic in appearance, but it will be retained in position much more easily.

The Pacific Stomatological Gazette for July, 1896.

"ALUMINIZED GUTTA-PERCHA," by F. W. Bliss, D.D.S., Santa Cruz, Cal. Read before the California State Dental Association, June 9, 1896. Gutta-Percha is the dried milky juice of an evergreen tree, which grows most abundantly on the Malay peninsula

and the surrounding islands. The method used by the natives to obtain it is a very destructive one. The largest and finest trees are selected and cut down, the bark removed and the juice run into receptacles prepared to receive it. The juice is dried and kneaded into cakes of oblong shape for exportation. The cakes are from five to ten pounds in weight, full of irregular holes, elongated in the direction in which the mass was kneaded, and are of a light reddish-brown color. The cakes, when cut, have a cork-like appearance and a peculiar cheese-like odor.

Dr. William Montgomery, of the Indian Medical Service, was the first to introduce it into general use, and its adaptation to a great variety of purposes soon created an extensive demand for it.

The gutta-percha of commerce contains many impurities. These being eliminated, it is rendered fit for use by the following process: The lumps are first sliced into very thin shavings; these are then placed in a tearing machine, which reduces it to minute fragments, which, falling into vats of hot water, are by agitation washed free from all impurities. The fragments of purified gutta-percha are collected and kneaded into masses. These are then passed several times between heated rollers, which press out the air and water, rendering the mass of uniform texture. It is then rolled into sheets of the required thickness.

Gutta-percha is soluble in benzine, chloroform and bisulphide of carbon, and insoluble in water, and only partially soluble in ether and alcohol. In combination with caoutchouc and sulphur, or certain sulphides, it is readily vulcanizable, for, if this combination be heated to 260° or 300° Fahrenheit, the gutta-percha undergoes a change similar to that which occurs during the familiar vulcanization of rubber.

Pure gutta-percha would not answer the requirements of the dental practitioner as a filling material, but must be made harder by incorporating oxide and sulphide of zinc and other materials; thus we get an admixture that works easily, resists mastication and is kind to the nerve and tooth structure.

For several years I have used the pink gutta-percha that comes in sheets, and the results are very satisfactory. But the color and the difficulty in manipulation is decidedly against it as a filling material. For this reason I commenced a series of experiments, the results of which I will give. My first experiments not being very

successful, I did not deem them of sufficient importance to record. The combination of silex, oxide of zinc and gutta-percha was found to be good to resist mastication; but the silex, being so gritty, the burnisher left a black mark on the surface of the filling. Many other combinations were tried, but did not meet with satisfactory results until I tried the combination of

White gutta-percha. eight parts.
 Aluminum filings. five parts.
 Oxide of zinc one part.
 Whiting. one-half part.

This admixture I have been very much pleased with, and have named it "aluminized gutta-percha." It is easily manipulated, and holds its position in the cavity when firmly packed. I have not noticed any bulging, which is so common in the pink gutta-percha. In testing for the conducting of the thermal changes, I took two thermometers that registered the same. I covered one bulb with gutta-percha, and the other with aluminized gutta-percha, being careful to have the material of equal thickness over each bulb. I then plunged both bulbs at the same instant into warm water, and then into cold water, and found the mercury in each changed nearly alike, with a slight difference in favor of the gutta-percha, showing that the addition of the aluminum filings does not materially increase the conducting quality of the new filling material.

I am not going to give much praise to the new admixture, but I believe it will take a prominent place in every dental list of filling materials. It works very easily; it resists mastication much better than other gutta-percha combinations, and is kind to the tooth.

If there is any one filling material to which I would pay special tribute, it is gutta-percha; for, although so often poorly manipulated, and consequently abused as unsatisfactory, it will in certain difficult cases, if properly used, render a better service in the preservation of the teeth than any other filling material.

Zahnaerztliche Rundschau for July, 1896.

"DENTISTS IN THE ARMY," by Dr. Otto Grunert, of Berlin; translation by Dr. B. J. Cigrand. The specialist, Dr. O. Weber, in his writing on "Accidents and Surgical Cases of the Face," speaks very favorably relative to the success of treatment of bullet wounds of the face, when under proper care. Even when the wound has

been caused by a close range shot, as in cases of attempted suicide, immediate healing sets in when aided by dental science. Dr. George Otis, in his report of surgical cases treated in the army of United States (Circular No. 3, War Dept., Washington, D. C., 1865-71), quotes the enormous figure of 3,312 cases of shot wounds in the face, of which number 135 were maxillary injuries; and he further declares that these wounds, especially those of the superior maxilla, heal readily when under the treatment of specialists. And on page 392 he asserts that qualified dentists should be consulted in cases requiring restoration of the dental functions. In conclusion he says, page 524, that the wounds of the mouth and adjacent parts often suffer permanent soreness and even chronic disease, not infrequently resulting in the loss of the teeth, when, if under the care of dental surgeons, proper restoration might be effected by means of obturators or dental substitutes which would prove both a comfort and a service.

Of our late wars, 1866-71, few official reports relative to patients or invalids are in existence, and just such cases as we dentists could have in charge constitute a large portion of the cases.

Surgeon-General Barthold in his work (*Militaeraerztlichen Zeitschrift*, 1872) relates in Vol. 10, page 456, an account of the Tenth Prussian army corps: "Of 1,804 invalids, 27 were superior and 30 inferior maxillary gunshot wounds." Mr. Massakowski in a German journal (*Zeitschrift fuer Chirurgie*, Vol. 1, page 325) says that during the Franco-Prussian war he had the opportunity while at Basel to inquire into the cases of a French division, and found that of the 1,415 cases, 9 were wounds of the upper and 3 of the lower jaw.

Surgeon-General Loeffler of the German army (Loeffler's Report, page 125) states that he treated 19 upper and 31 lower maxillary wounds among 3,588 patients. Dr. Beck in his work (*Surgery of Gunshot Wounds*, pages 440-443) states that of 4,344 shot wounds, 21 were upper and 31 lower jaw injuries.

The loss of teeth through shot wounds is not included in the foregoing statistics; however, such accidents are quite frequent. While in the war of 1866-71 I saw numerous accidents which entailed the dental organs direct, and shall, at a later period, compile from my war diary a report and submit it to the profession. Unfortunately the material of this theme is greatly scattered. In our gen-

eral literature we find but little on the subject; the greater portion of it can only be gleaned from dental journals, and much can be gotten from the writings of Dr. Otis, of the American army. Among the dentists of Germany who have contributed to the literature of this subject are Drs. Suersen, Haun and Hartung, all of which can be found in the *German Quarterly Dental Journal*; but there are many cases which were given private treatment, and of these we are anxious to learn. I am of the opinion that if dentists, even in times of peace, were appointed to examine and care for the teeth of soldiers, it would soon become recognized that great good would result. And I deem it advisable and recommend that in times of war eminent dentists be appointed on the military staff to attend to such cases as fall under our special domain.

Journal of American Medical Association for July, 1896.

"DENTISTS CANNOT PRESCRIBE WHISKY FOR 'TOOTHACHE'." On a Sunday of last year a resident of Hendersonville, N. C., had an aching tooth and went to a dental surgeon, licensed by the State Dental Association, and asked him for a prescription for whisky. The doctor examined the tooth and told the man that he would give him a prescription for half a pint, but, on the man's insistence, he finally gave him a pint. The sequel of this was the indictment and conviction of the person who filled the prescription for selling liquor on Sunday illegally. Appeal was taken to the Supreme Court of North Carolina. April 21, 1896, it rendered its decision of "No error." All turned on whether a dentist is a physician or not within the meaning of a statute prohibiting the sale of liquor on Sunday unless prescribed by a "physician." The court quotes the definition in Webster's Dictionary: "A physician is one authorized to prescribe remedies for and treat diseases; a doctor of medicine." A dentist, or dental surgeon, it says, is one who performs manual or mechanical operations to preserve teeth, to cleanse, extract, insert or repair them. The statutes of North Carolina recognize that dentists are not included in the term "physician," by providing separate enactments for each.

If dentists came within the term "physician," as used in the statute above mentioned, the court goes on to say that "toothache" would become more alarmingly prevalent than "snake bite," and that it would with usage become more dangerous, it says, is evident

from the fact that the very first dental surgeon's prescription for toothache coming before the court is for "one pint of whisky." The size of the tooth was not given, nor whether it was a molar, incisor, eye tooth or wisdom tooth, and yet the court takes judicial cognizance that there are thirty-two teeth in a full set, each of which might ache on a Sunday. The duties of a dentist are limited, is the conclusion, to the "manual or mechanical operations" on the teeth. Whenever the use of liquor is necessary, it being a remedy to act on the body, and only indirectly in any case for the teeth, within the purview of the statute, it must be prescribed by a "physician" to authorize a sale on Sunday under such a statute.

The International Dental Journal for July, 1896.

"LORETIN, THE NEW ANTISEPTIC," by S. Eldred Gilbert, D.D.S., Philadelphia. The advantage of iodine preparations in antiseptic surgery have been firmly established, and that of iodoform has become the one most generally used, but with all of its good qualities there are several that are not so desirable. The disadvantages of its odor, toxic and irritant characters, greatly limit its use, and a new iodine preparation has long been desired and sought which shall be free from odor and absolutely non-poisonous. Loretin supplies this want. It has a complex constitution, being systematically called meta-iodo-ortho-oxyquinolin-ana-sulphonic acid and represented by the formula $C_9H_4IN.OH.SO_3H$. "Loretin is a bright yellow-colored crystalline powder not unlike iodoform in appearance. It is slightly soluble in water (about two parts in one thousand) and alcohol. It is practically insoluble in ether and in oils, but forms emulsions with oily liquids, and collodion, a soluble form of loretin, is also prepared. Being an acid it forms neutral salts with alkalies, which are easily soluble in water, forming solutions of an orange-red color. The calcium salt is insoluble in water, and can be easily precipitated on gauze impregnated with a solution of sodium salt by dipping into a solution of calcium chloride. Loretin gauze possesses the bright red color of this calcium salt." It may be employed as loretin powder, either alone or mixed in different proportions, with suitable materials, as calcined magnesia, French chalk, starch, etc.

Loretin colodion, in two to ten per cent emulsions.

Loretin pencils of cocoa butter, containing five to ten per cent.

Loretin ointment, five to ten per cent, with vaseline or lanolin.

Loretin solution, containing 0.1 to 0.2 per cent of free acid or one to two per cent or more of the soluble sodium.

Loretin gauze impregnated with precipitated calcium salt.

Its non-toxic property has been fully established by Professor Claus and Dr. Ammelburg by careful experiment, and borne out by clinical experience. Professor Schinzinger says he has employed loretin with great success in the treatment of boils, burns, lacerated wounds, poisoned cuts, and in gynaecological practice; also in many major surgical operations. In none of these was there a single instance of toxic effect.

In purulent discharges it quickly removes the offensive odor. Professor Schinzinger considers no praise too high for the anti-eczematous powers of loretin. He says that generally, when he has been called as consulting physician and prescribed loretin, eczema disappeared where it had resisted all other treatment and which every proposed remedy had increased. Its favorable action, he says, was distinctly developed in one case recently under treatment "Following a slight phlegmon on the elbow, treated with carbolic acid, an extremely painful eczema spread over the whole of the forearm and up to the shoulder. After different medicaments had been tried without success and the eczema had been considerably heightened by carbolic-zinc plaster, it completely disappeared in a short time under loretin treatment." In its uses Ammelburg says that he has never been able to find albumen, blood, sugar, or iodine in the urine. The absence of the latter is especially corroborated by Professor Albrecht. Before passing to the bacteriological proofs of this disinfectant, I wish to say that for the following tables I am indebted to Dr. B. Korff.

"To each twenty cubic centimetres of disinfectant three drops of pure bacteria cultivation was added, or of pus, and allowed to remain with occasional shaking for twenty minutes; then from each mixture four test-tubes containing sterilized broth gelatin were inoculated, to the first tube 1 c.c. of the infected disinfectant, to the second and third $\frac{1}{2}$ c.c. each, and to the fourth $\frac{1}{4}$ c.c. being added. They were well mixed and then poured out on cultivation plates."

TABLE I: *Pure Cholera Cultivation*.—Meta-cresol, two per cent: no growth. Carbolic acid (phenol. absol.), two per cent: no growth. Lysol, two per cent: no growth. Loretin, two per cent: no growth. Loretin, two per mille: no growth. Iodoform, two per

cent: upon all four plates, scattered colonies. Control, numerous colonies.

TABLE II: *Pure Staphylococcus Pyogenes Aureus Cultivation*.—Meta-cresol, two per cent: no growth. Carbolic acid, two per cent: no growth. Lysol, two per cent: no growth. Loretin, two per cent: no growth. Loretin, two per mille: no growth. Iodoform, two per cent: isolated colonies. Control, numerous colonies.

TABLE III: *Anthrax, Anthrax Broth*.—Meta-cresol, two per cent: no growth. Carbolic acid, two per cent: no growth. Lysol, two per cent: no growth. Loretin, two per cent: no growth. Loretin-sodium, one per cent: no growth. Iodoform, two per cent: isolated colonies. Control, numerous colonies. In this series a one per cent aqueous solution of loretin-sodium was tried instead of a two per mille aqueous solution of loretin.

TABLE IV: *Pure Bacterium Coli Cultivation*.—Meta-cresol, two per cent: no growth. Carbolic acid, two per cent: no growth. Lysol, two per cent: no growth. Loretin, two per cent: no growth. Loretin, two per mille, on all plates: numerous colonies; about half as many as with iodoform. Iodoform, two per cent, on all plates: numerous colonies. Control, innumerable colonies.

TABLE V: *Pure Typhus Cultivation*.—Meta-cresol, two per cent: no growth. Carbolic acid, two per cent: no growth. Lysol, two per cent: no growth. Loretin, two per cent: no growth. Loretin-sodium, one per cent: no growth. Iodoform, two per cent: no growth. Control, numerous colonies.

TABLE VI: *Pure Streptococcus Cultivation*.—Meta-cresol, two per cent: no growth. Carbolic acid, two per cent: no growth. Lysol, two per cent: no growth. Loretin, two per cent: no growth. Loretin-sodium, one per cent: no growth. Iodoform, two per cent: no growth. Control, numerous colonies.

TABLE VII: *Pus from a very Infectious Phlegmon* (containing streptococci and staphylococci).—Carbolic acid, two per cent: retarded growth of streptococcus colonies. Loretin, two per cent: no growth. Iodoform, two per cent: retarded growth of streptococcus colonies. Control, very numerous colonies of streptococcus and staphylococcus.

By the foregoing we can readily see what a valuable preparation loretin is in surgery. It is just as valuable to the dentist in his line. For nearly a year I have been using it in the treatment of pulpless

teeth and teeth having abscesses in all stages, with and without fistulous openings, and where I have formerly used iodoform, etc., and am now ready and fully prepared, from clinical experience, to say that loretin is superior in my hands to any of the many antiseptics I have tried. One pleasant thing to me about it is that now the persistent odor of iodoform in my office is a thing of the past, and patients are no longer asking "What is that horrid smelling stuff?" Also no more nausea, that would sometimes happen when iodoform was used.

The action of loretin is prompt in the treatment of putrescent teeth. I have had a great deal of pleasure in its use in the treatment of putrescent pulps, having used it in several ways, but most in combination with oil of cassia, as this is a pleasant vehicle for conveying the loretin into the tooth-canal.

It may be well to give the method employed in treating these teeth. After having prepared the tooth crown the root-canals should be well opened, going as near to the apex as possible; the medicament is then pumped into the root by means of a broach wound with cotton, then a string of cotton saturated with the loretin preparation is packed in the root and the patient dismissed for a week; upon the patient's return the cotton is removed (of course no saliva is allowed to enter the tooth), and if there is no odor other than that of the medicament, another string of cotton is placed in the root same as before, but this is covered with Gilbert's temporary stopping, closing it tightly; the patient is instructed to return in a week in case there is no inflammation, but should the tooth become sore to return immediately, when the temporary stopping is removed, as the tooth by this tenderness indicates that it is not yet in condition for filling; if the patient returns at the expiration of the week with no soreness in the tooth, it is ready for the temporary or trial filling, which is as follows: Form temporary stopping into cones to fill the canals; this is done by warming the stopping and rolling it between the thumb and finger; remove the dressing that is in the tooth, and with a cotton-covered broach pump in a little of the loretin mixture, following with chloro-stopping; then insert the temporary stopping cones in the canals, filling the crown with white temporary stopping. This filling is generally allowed to remain for two weeks; at the end of this time we are sure that if there has been no trouble it is safe to fill permanently. In doing this the stopping in the roots is not disturbed but allowed to remain, as there is no better root-filling.

The above method is where a fistula has not been established; in case it has, the tooth is opened thoroughly, passing through the apex, the loretin mixture is pumped through the tooth until it appears on the gum through the fistula; this is followed by pumping the chloro-stopping through until it also appears on the gum. The temporary stopping cone is inserted in the roots, the tooth filled with white temporary stopping, and the patient dismissed for from three to six weeks, or until the abscess has thoroughly healed, which is generally in about four weeks, unless there is carious bone or some cause other than simply the abscess. Of course, cases out of the common line are treated according to the cause. The above treatment has proved successful in many cases of long standing. Care should be used not to flood the crown of the tooth with too much loretin, as it has a tendency to darken it. I have had no trouble that has amounted to anything thus far, as I have tried to use care in this direction.

The Dental Cosmos for July, 1896.

"DISEASES OF THE ORAL CAVITY A POTENT FACTOR IN GENERAL DISEASE," by Dr. S. W. Foster, Atlanta. Read before the American Medical Association, in the Section on Dental and Oral Surgery. The oral cavity, in its broad range of function, exceeds in importance any other organ of the human body. These include articulation, vocalization, prehension, mastication, insalivation, deglutition, etc. Its employment is constant from the induction of life to the last breath of old age. Its functions are so important that any interfering pathological condition would have manifest effect upon the other organs. This is shown plainly in the disorders accompanying first dentition. When the development of the tooth proceeds more rapidly than the overlying tissues are absorbed, we have local inflammation, the secretions become much increased, pressure on the nervous and vascular supply involves the whole system. The child becomes wakeful, restless and fretful, refuses nourishment; the alimentary canal becomes more active, diarrhoea follows, and if relief is not given, relaxation of the vital forces follows, and we have nausea, vomiting, convulsions, paralysis and not infrequently death. Statistics show that more deaths occur during the period of first dentition than during any other like period during life. When we consider the anatomy of the trigeminus nerve, which supplies the teeth, we rec-

ognize the possible reflex effects upon remote organs. This is a compound nerve, varied in its functions—a nerve of special sense, common sensation and motion; the great sensitive nerve of the head and the face, the motor nerve of mastication, its lingual branch being the nerve of the special sense of taste. It sends important branches to the ear and eye, anastomosing with many other nerves. It is not strange, then, that we have remote lesions originating from disorders affecting this nerve. Neuralgia and earache are among the most common.

The essayist exhibited an unerupted impacted central incisor which had been extracted from the mouth of a lady aged about twenty-five. The lady had suffered from neuralgia for several years, despite the attentions of the best physicians available. She had tried change of climate, and taken every other means suggested for relief, but to no avail. Finally her dentist, noticing the absent tooth, made a careful examination and located it, with cutting-edge pointing upward and almost protruding into the nasal cavity. He removed the tooth by making an incision at the union of the lip with the gum, removing the overlying osseous tissue with burs and chisels. With the healing of the wound the neuralgia entirely disappeared, and the general health was greatly improved.

He also described a case in which the left superior second molar interlocked and impacted the third molar, the coronal surface of which was deflected backward toward the tuberosity of the jaw. The history of the case was of a dull, heavy, gnawing pain about the region of the malar bones, which finally terminated in slight paralysis of the face, from which no relief could be found. The second molar having developed quite a large cavity, she applied to have the tooth extracted. The operator was much surprised at bringing with it the unerupted third molar. Within a few weeks after this operation the paralytic condition disappeared. We believe these cases, as well as many others, are the result of reflex irritation produced by dental disorders.

We frequently have recorded cases of amaurosis as the result of inflamed or dead pulps, or chronic catarrhal trouble produced by a diseased tooth, first producing an inflammatory condition of the antrum and spreading from thence through the nares and various sinuses.

In examining the mouths of many patients suffering with that

hydra-headed monster, dyspepsia, it has proven the exception when the masticating powers have not been destroyed from one-third to five-sixths of their capacity. We know that the balling of food and throwing it upon the stomach day after day will produce dyspepsia, gastritis, etc.; and we must admit that if the inability to properly masticate the food is not the direct cause of this dreadful disease, it certainly goes hand in hand with it. Lower the vitality and you invite disease. The oral cavity is the commencement of the digestive tract—the antechamber to man's vegetative life—and in this respect it is anticipatory to the stomach. Therefore it is reasonable to suppose that any lack of hygienic or any pathological condition that causes a deficiency of quantity or quality of the fluids which are first met with when food first enters the mouth is a hindrance of nutrition, and undoubtedly makes its impression on the stomach.

Often when a patient presents herself for treatment we notice the bloom of life has left her cheeks, her eye has not the sparkle it once displayed, she is anemic, debilitated, and despondency and melancholy brood over her. Her physician not being able to locate the trouble in any special organ, pronounces it a case of "nervous debility" or "giving down of the vital forces," and the use of tonics, with change of residence, is advised. A careful examination of the oral cavity would possibly reveal a seething pit of filth, decayed and broken-down teeth, suppurating sinuses, contaminating the air of respiration, vitiating the oral fluids, poisoning nutrition and consequently lowering the vital forces and breaking down the general health. This is not imaginary, but the real condition of the mouths of many of our patients, nor is it a wonder that the system breaks down.

It is rarely that we see a consumptive in whom we do not find a typical case of pyorrhea, or at least pus exuding from around the necks of the teeth, and it seems that the breathing into the lungs the effluvia from these suppurating sinuses of the mouth might produce this fatal disease.

This leads to the question, what should the co-operation of the physician and the dentist be? Or should the dentist know more of medicine, or the physician know more of dentistry? My conclusion is that no medical college should be without a chair on the principles and practice of dentistry, and our dental schools should, as a rule, teach more of general medicine and surgery.

"SOME NOTES ON THE USE OF GOLD AS A FILLING MATERIAL," by Dr. L. Ashley Faught, Philadelphia. Read before the union meeting of the Maryland State Dental Association and the Washington City Dental Society at Washington, May 8, 1896. Every dentist in full practice must by the pressure of previous training, and in no small measure by environment, have brought his methods used in the service of his clientele into some order and system; in other words, other things being equal, to use a given filling material in a given place.

Leaving out of the question the care of the teeth of very young children and of those mouths of all ages in which the teeth are below medium in quality, he will find that where sufficient remuneration can be obtained his system includes in no small measure the use of gold as a filling material. No matter what his ability to use this material, or what his convictions regarding its utility, he must of necessity look upon its use as a requirement, and on his results with pride and satisfaction, or on the efforts of others with admiration and approval. His inspection of his own work and close observation of that of others will undoubtedly deprecate the ravages and dilapidation caused by its demonstrated misuse; but notwithstanding such outraged feelings, he is brought time and again to look upon it as a most valuable filling material and one whose place in his system has never been nor cannot at present be satisfactorily taken by any other.

The proposition as here enunciated being accepted as demonstrated truth, the best service to be obtained from gold will be in proportion as one has clear ideas regarding its use.

Prominent in the forming of my own ideas, which it is the province of this paper to state, are two essential facts:

First, that work has been done with it which has proven a joy forever; second, that work has been done with it which has ingloriously failed.

Query—Why one result? Why the other?—conditions being apparently equal.

Answer—Difference—first, in method of preparation of cavity; second, in method of insertion of gold; third, in method of finishing fillings; fourth, in method of cleanliness by patient—oral hygiene.

The elaboration of the ideas involved in these four replies

involves the whole subject of gold filling, and I wish right here to disclaim any intention of entering upon their consideration so extensively as to pose as a teacher of the subject. A few points regarding each, which have impressed me as salient, are all that I shall treat.

The preparation of cavities in teeth to receive gold does not admit of frail cavity-walls, does not admit of overhanging walls, does not admit of rough or irregular edges. I have particularly found that good, substantial walls with nicely polished edges are essential to success. I also advise, in approximal fillings, to cut back far enough to expose the point of junction between the gold and the tooth substance so as to admit of proper cleansing. In approximal fillings especially securing the point of contact between the two teeth in gold.

Regarding the insertion of gold into such cavities, I stand here as an advocate of the good old-fashioned method of hand-pressure; the motto ever before me being that the great essential is not rocky solidity, but adaptation to the walls of the cavity with sufficient condensation to prevent disintegration. Mallets may be rapid, but time is nothing and the result everything. I verily believe that many fillings fail from the effort with mallets to obtain unnecessary solidity. He who has cultivated strength in his fingers with that peculiar motion known to a hand-worker, and the drop of the wrist, can properly impact gold without mechanical adjuncts, which only too frequently comminute the marginal edges of the cavity. Small pieces and small points, with not too much annealing, are the other requisites to success. Use, but be cautious in your use of, matrices, and always contour your work.

The proper finishing of fillings I have found to require that the cavity should be filled to a little, a very little, over flush, and never so full as to be excessive, and then a thorough and persistent use of burnishers to the large exclusion, or very cautious use, of stones and files.

My last consideration is not the least in importance, but lies in the hands of the patient. The best work is liable to failure if the patient is careless in cleanliness. Having done all, every effort should be made to impress the need of this great adjunct upon the minds of those to whom the jewels are intrusted.

Letters.

ANOTHER LETTER FROM FLORIDA.

MANATEE, FLA., August 10, 1896.

To the Editor of the Dental Digest,

DEAR DOCTOR:—All that Dr. Truman says in the DIGEST for July, so far as I can see, has no direct bearing on the plan of filling by pressing blocks of amalgam into soft cement and plating over while soft. Dr. Reese, however, describes the plan exactly, and I am sorry I overlooked his article in 1886. We cannot be sure of seeing everything that may be in the body of long reports of societies. I am glad these gentlemen have been moved to write what they have, and I do not regret anything I have written on the subject if it leads to a more general adoption of a plan that I know is not now appreciated at anything like its true value by the profession in general.

I wish to express my appreciation of the line of work touched upon under the head of "Painless Dentistry." I am very anxious to see all these new methods in dental practice commented on by men of such standing that it will give reasonable assurance that we are on safe practical ground. Individual discoveries and improvements will in this way be in nowise impeded. Your enterprise will no doubt stimulate others to renewed efforts. We want order, in place of the confusion that has obtained so long through the efforts of irresponsible vendors of secret methods, compounds, nostrums, etc.

Respectfully yours,

W. E. DRISCOLL.

SOME HINTS FROM WISCONSIN.

MENOMONIE, WIS., August 15, 1896.

To the Editor of the Dental Digest,

DEAR DOCTOR:—I send you a few items. If there is anything new or of value you may publish it; if not, no harm is done.

My experience with sodium peroxid for treatment of pulpless teeth. Bought a can of it over a year ago and it had these cau-

tions printed thereon: "Keep the can closed tightly. Do not spill powder on the floor. Use iron scoop for handling powder. Follow directions." I observed all these rules for several months, but do not see why it is necessary to do so. Could notice no change in it to speak of when can was left open. The second caution is said to guard us against fire, but I have been unable to cause it to assist combustion, no matter how careless I was about spilling it. Can see no use for the third caution, as I have used a wooden paddle and also a steel plaster spatula to handle the powder and have discovered no bad results from so doing.

However, I followed directions and had the following results from its use. Patients felt severe pain when the solution was forced through apical foramen, which continued for several hours, and in some cases produced an acute attack of alveolar abscess. In other cases of chronic abscess the solution produced necrosis of the process around the point of root and caused loss of tooth. In all cases where the solution went through the foramen there followed severe pain, and this was worse in young persons with large foramen. I tried to neutralize it according to directions, but the above was my experience, and I abandoned its use. Will some one tell me what was the matter?

When extracting teeth and blood spots get on clothes the stains can be removed with H_2O_2 .

For convenience in use, cheapness, and as a time saver, I find the wood pulp-canal points superior to anything else. After the canal has been pumped full of chloro-percha, twist off the wood point in canal.

An old broken pair of beaked forceps makes a good articulator for crown and bridge work.

Yours truly,

W. H. BAILEY.

NEW YORK LETTER.

NEW YORK, August 17, 1896.

To the Editor of the Digest,

MR. EDITOR:—New York almost, but not quite, deserted. With the mercury at 100° it is too hot for active practice. Some practitioners are across the water attending the Society of American Dentists convening in Dresden. Some have been in attendance at

the New Jersey State Association at Asbury Park. More have been at Saratoga holding up the American Dental Association, and many are away. A certain number, of course, stay by their offices, hoping to catch a stray patient, for there are such in a large city like New York.

The avenue and "painless" practitioners are always open and the latter are on the increase, if their advertisements are an indication. We learn that, for a wonder, they have not as yet infested the Pacific coast. What does it mean?

We have been spending a very pleasant two weeks at the native town of the late Dr. Dwinelle, Cazenovia, Madison county, N. Y. At the time of his death we were invited by the Odontological Society to represent it at the funeral and to lay a beautiful wreath on his casket. Except for the doctor's successor, Dr. Phelps, now in active practice at 82, we were the only dentist at the funeral. However, it was extreme winter weather at the time, the mercury at 24° below zero and a foot of snow on the ground.

We were so much pleased with the outlook that we fancied we would like to visit the place in the summer time, and we have done so, very much to our pleasure. We spent the last two weeks of July there. It is an unusually well-located town, 1,300 feet above the sea level, with a rich farming community, three hotels, dozens of cottages for summer boarders, and some magnificent summer residences. There is a beautiful lake right in the front yard, as it were, of the town, so that altogether it is an attractive place for summer visitors, who generally number some seven or eight hundred. There is evidence of wealth and refinement on all sides. Cazenovia has cause to boast of many born there who have reflected honor upon the town, such as ex-Secretary Fairchild, Senator Fairchild, Dudley Warner, Armour, and many others.

The house that our late co-worker lived in is still standing, in a good state of preservation, although built in 1806, and is now the home of the doctor's sister. The father was a lawyer and at one time represented his town in Congress.

We visited the grave of Dr. Dwinelle in the neat and attractive cemetery, but as yet no stone marks the place. We think it would be a nice thing to provide one by contributions from the profession, and we believe it needs only to be suggested to be promptly carried out. Dr. Dwinelle was not sparing of his help to those in need.

We are indebted to Dr. Phelps for many kind attentions during our stay in Cazenovia. He has earned a coveted citizenship by his conscientious dental professional life. Eighty-two years is a ripe old age to be found still at work. He has in his possession the chair with which Dr. Dwinelle started practice.

During our stay we met our old friend, Dr. William B. Hurd, of Williamsburg, who was spending the summer at Cazenovia.

Is it not a little strange that the journal of which Dr. Dwinelle was first editor did not, so far as we know, make any notice of his death?

We learn that the American Association at Saratoga did not have a large attendance, nor did it vote to go to the Pacific coast.

Cordially, NEW YORK.

THE WHALE CURE FOR RHEUMATISM.—It is reported that at the town of Eden, a place in Australia, which stands on the shores of Twofold Bay, there is a hotel where rheumatic patients congregate. Whenever a whale has been taken the patients are rowed over to the works in which the animal is cut up, the whalers dig a narrow grave in the body, and in this the patient lies for two hours as in a Turkish bath, the decomposing blubber of the whale closing around his body and acting as a huge poultice. This is known as the "whale cure for rheumatism."—*Annals of Hygiene*, July, 1896.

ARTIFICIAL BLOODLESSNESS.—*The Medical Press* reports an address by Von Esmarch. It was through accident that in 1873 he came upon his method of artificial bloodlessness. A Danish lady had an inflamed finger and wished to have a mourning ring removed. To effect this, he wrapped a thread closely round the finger from the tip up to the ring. He then passed it under the ring and unwound the thread in the reverse direction. The ring was then easily removed on account of the artificial bloodlessness thus produced. This was the principle of producing artificial bloodlessness in a limb. By encircling the limb in an elastic tube the vessels were kept empty as long as necessary. It was objected to this method, however, that the procedure caused paralysis, that the edges of the wound died, and that after removing the tube the bleeding was more profuse than before. He does not use the tube any longer but an elastic band, but in operation on the shoulder and hip joint the elastic tube was still indispensable. The following is the procedure in the Kiel Clinic: The limb is first of all held perpendicular if possible, and enveloped in an elastic bandage. The elastic girdle is then applied at the desired level, but care must be taken not to cause paralysis. On the other hand it should not be applied too loosely, so that some expertness is required. After the operation the vessels are ligatured, the wound closed, and the girdle taken off only after a good compressing bandage had been applied.

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

EXPLANATION OF THE DELAY.

Owing to the illness of the associate editor, who does most of the journal work, and who has just recovered from an attack of appendicitis, this issue of the journal is nearly three weeks late in appearing. The September DIGEST will be published about the 7th of October and the October number at the usual time, the last of that month. We trust our readers will pardon the delay in view of the circumstances.

SPECIAL MEETING OF THE PROTECTIVE ASSOCIATION.

One of the most important meetings held at Saratoga, from our standpoint, has not been mentioned. We allude to the meeting of the members of the Dental Protective Association. Not the one in the general meeting, where simply an explanation of the progress of the litigation was made, but the special meeting of the members.

As we had been working on this reform movement for two or three years, with a view of remedying the abuses practiced upon us by the supply companies, and had not had an expression from the representative men of the profession, we called this meeting to ascertain whether or not we had the sympathies of the members and whether we would have their substantial co-operation. The result was merely a double confirmation of our former belief—that such a movement was needed and would receive the support of the profession.

The uniformly substantial and liberal expression of the members present was more than encouraging, and we feel sure that when the membership of the Protective Association fully understands what this movement means they will furnish all the influence and support necessary to more than fulfill our expectations and prophecies.

The work of the Protective Association has been a success. The organization of the members of the profession into the Association only a partial success. The success of the Protective Supply Company means a completion of the organization of the Protective Association. It is not to be expected that success in either of these lines can be accomplished without considerable time and effort being expended.

It is true that the occupation of a dentist bars him from the average amount of association with his fellow practitioners and the members of the community in which he lives, dwarfs his estimate of the future, and makes him look with suspicion upon great movements having for their object the benefit of all; we therefore solicit the co-operation and encouragement of those who understand the scope of the work contemplated, in order to interest those who need the encouragement. No class of men would be greater benefited by what this movement contemplates than the dental profession.

We will give more of what this means another time.

THE RECENT MEETING OF THE AMERICAN DENTAL ASSOCIATION.

Our meetings this year were not up to the average, and various causes have been assigned by different ones, viz., the wrong time of year, the wrong place, the fact that last year's proceedings were not published in time so that members could see in which section they belonged and who the officers of the sections were. The hot weather has also been given as a cause, and we will add another, which we think the most plausible—the hard times. There is also another reason which has held good this year, as it has in former years, for the American Dental Association not doing better work; it is that we do not have the co-operation of the state and local societies.

We have urged for some years that the meetings should not be held at a time when the dental profession take their vacations. Many do not attend on this account, and those who are present have relaxed their nervous energies and are not apt to participate with the vigor to give successful results. It is true that the weather was extremely warm, but if it had been cool we do not think there would have been many creditable reports of the sections.

We have mentioned, as a cause, the stringency of the times. When business interests are depressed as they have been for the last two or three years, especially during this last year, the average person neglects many duties. We are not as likely to do our best in professional work when our patients are coming to us cramped for the necessary means, and are feeling depressed by the hard times, often annoying us by their discomfiture of mind and body caused by the uncomfortable conditions of their private business. We cannot do as well as we could if all were prosperous, with plenty of money to pay their bills, and so felt good natured. The depressed state of business interests has fallen very heavily on the dental profession, and it would be folly to urge that this has not had its influence on our treatment of our patients, and certainly we do not do* as much literary or professional work outside of the office, as when the financial conditions are prosperous. Not only are professional men annoyed by ungenerous treatment given by their patients many times, but also the wherewithal to pay their own bills being lacking, is very often a great barrier to good professional work. Hence we believe the hard times to be the most important reason mentioned as a cause for our unsuccessful meeting this year.

Most important of all, the national body of the dental profession should have members of every section in every state and local society, to gather during the year the good work that is being done and to condense it for the chairman of the section. Therefore, the chairman of each section should be alive to this duty and should see that in every society there is some one looking after the interests of his section, accumulating the important work of all the societies, to be presented in well digested reports at the annual meeting of the American.

We have urged this many times and will not dwell longer upon the matter here, but in the near future will try and define a little more in detail what we think this work should be. When the members of the various societies act in concert with the National Association we will have what is certainly much desired—a concentration of all the work of the local societies each year; and until then we cannot do the greatest work in our profession.

ACONITINE.—One two-hundredth grain every two hours relieved a most obstinate facial neuralgia on the second day.—*Hausberger.*

Notices.

DENTAL SOCIETY OF SOUTHWESTERN MICHIGAN.

The Dental Society of Southwestern Michigan will hold its semi-annual meeting at Dowagiac, September 8 and 9, 1896. The Executive Committee is arranging a very interesting program and a good attendance is expected. A cordial invitation is extended to the profession in this and other states.

DR. E. I. BACKUS, Sec'y, St. Joseph, Mich.

NEW JERSEY STATE DENTAL SOCIETY.

At the twenty-sixth annual meeting of the New Jersey State Dental Society, held at Asbury Park, N. J., July 29-31, inclusive, the following named officers were elected: President, Harvey Iredell, D.D.S., New Brunswick, N. J.; Vice-President, J. L. Crater, D.D.S., Orange, N. J.; Secretary, Charles A. Meeker, D.D.S., Newark, N. J.; Treasurer, George C. Brown, D.D.S., Elizabeth, N. J.

DR. CHAS. A. MEEKER, Sec'y.

MINNESOTA STATE DENTAL ASSOCIATION.

This association held its thirteenth annual meeting in Winona, August 19-21, 1896. The following officers were elected: President, Dr. W. D. James, Tracy; Vice-President, Dr. F. S. Robinson, Plainview; Secretary, Dr. H. L. Cruttenden, Northfield; Treasurer, Dr. H. M. Reid, Minneapolis; Chairman Executive Committee, Dr. O. A. Weiss, Minneapolis; Master of Clinics, Dr. T. B. Hartzell, Minneapolis. The next place of meeting will be Minneapolis.

DR. H. L. CRUTTENDEN, Sec'y.

WISCONSIN STATE DENTAL SOCIETY.

The twenty-sixth annual session of this society was held in the State House at Madison, July 21-23, 1896. There was an attendance of over one hundred dentists, and the meeting was in every sense successful, enjoyable and profitable. The papers, discussions and clinics were of a high order and very creditable. For the third time Madison was chosen as the next place of meeting.

The society has taken on renewed vigor the past few years by the influx from all over the state of young and active men who are in earnest for better things. The spirit of association is abroad in the state. The Southern Wisconsin Dental Association is a thriving young body whose annual meeting will be held at Mineral Point in May next, and two or three similar organizations are in near prospect. So, what with our new school in Milwaukee also well established, the professional and ethical aspect of dentistry in Wisconsin seems encouraging.

CHAS. C. CRUTTENDEN, D.D.S., Madison.

NORTHERN IOWA DENTAL SOCIETY.

The second annual meeting of the Northern Iowa Dental Society was held at the Hotel Orleans, Spirit Lake, August 11-13, 1896. The attendance was good, taking into consideration the change of time being made so late that quite a number who wished to could not meet with us.

The sessions were well attended and great interest was taken in the discussions. The clinic of Dr. Leonard, of Waseca, Minn., attracted considerable attention, both in the preparation of the cavity, a proximate one in a lower molar, forming a supplemental cavity for retention, and filling with the matrix, using a peculiar clamp of his own to hold the matrix firm at the cervical border. He imbedded a pin in the amalgam, running from the main cavity to the supplemental cavity, so as to strengthen the weak portion of the filling. Dr. Breemer, of Mason City, prepared a cavity in a central incisor involving the proximate and incisal walls, using a screw post. Drs. Breemer and Richardson, of Mason City, Dr. Begun, of Des Moines, and Dr. Leonard, of Waseca, Minn., filled the cavity with gold, Dr. Leonard using a smooth foot plugger. Dr. Begun dressed two pulpless teeth, using sodium and potassium. Dr. Clack, of Clear Lake, administered gas and extracted a tooth. Dr. Topliff, of Decorah, inserted a bridge. Dr. Richardson, of Mason City, exhibited a number of jacket crowns, but was unable to demonstrate baking with his oil furnace. Dr. Simmons, of Decorah, injected for the extraction of two teeth.

The officers for the ensuing year are: Dr. J. J. Grout, Rock Rapids, President; Dr. Guy Huntley, Mason City, Vice-President; Dr. W. H. Steele, Forest City, Secretary; Dr. A. N. Ferris, Waterloo, Treasurer.

The next place of meeting will be at Mason City, the first Tuesday in September, 1897.

We added twelve to our membership, making over forty members at our second meeting, and hope to double that number at our next meeting.

We hope that next year there will not be a dentist in northern Iowa who will not be a member of the Northern Dental Society, a subscriber to the DIGEST and a member of the Dental Protective Association.

DR. E. D. BROWER, Le Mars, Ia.

HAYSEED SPROUTED IN THE EAR.—Dr. Macnaughton Jones reports a case where the patient had been suffering from noises in the ear for some years, and had other evidences of middle ear deafness. He sought advice for the deafness, being quite unconscious of the presence of any foreign body. On examining the meatus, what appeared to be a pink sprouting mass of fungus was seen with the transmitted light. The appearance was most puzzling, and it was not until the sprouting hayseed was withdrawn that its nature was discovered. It was quite firmly attached to the walls of the meatus, being removed clean with the lever forceps. The patient then remembered having, over two years previously, at harvest time, suddenly felt as if something had entered his ear, and the tinnitus began.—*Journal of Laryngology, Rhinology and Otology*, June, 1896.

News Summary.

A BERLIN SOCIETY OF AMERICAN DENTISTS.—The dentists of Berlin who are graduates of American dental colleges, at a meeting recently held, decided to form an organization.—*Medical Record*.

GRATITUDE OF THE PATIENT.—The gratitude of the patient is well known to me—it is part of the disease. It comes on with the fever, improves during convalescence and is cured by a return to health.—*Vaquerie*.

SOUVENIR OF SARATOGA.—The book of views of Saratoga, which Mr. E. T. Sawtell, the New York City agent for Borolyptol, distributed to the dentists attending the American Association, was very well gotten up and a desirable souvenir.

STRENGTH IN COARSE BREAD.—After analyzing various qualities of flour, M. Girard informs the Paris Academy of Sciences that the common belief that fine white bread has less nutritive power than coarse brown bread is wrong, as both the fine and the coarse breads contain practically the same amounts of gluten and phosphates.

NEW LOCAL ANESTHETIC.—In the *Courrier Medical*, Loup describes a method of inducing local anesthesia which he claims to be most suitable for small operations. He employs olive oil which has been boiled for five minutes, and states that in dental operations it is equal to cocaine, without any of the "dangerous possibilities" attached to the latter. He admits its sole action is "by pressure upon the surrounding tissues."

FOREIGN BODY IN THE TONGUE.—M. Derville communicated a case of foreign body in the tongue, to the *Societe des Sciences Medicales de Lille*. The patient was ignorant of its presence; it is interesting from the fact of its way of penetration. The one injured, a man 55 years of age, had been examined by several physicians who had diagnosticated a lingual gumma, the tumor presenting the characteristics of a gumma. On palpating the tongue M. Derville saw a thin stream of yellowish serous fluid oozing from the dorsal surface of the tongue, which led him to probe the track; passing in between one and two centimeters the probe struck against a hard substance which was extracted after incision of the tongue. This piece of foreign body was a bit of amber 2½ centimeters long by 1 in breadth, whose presence was explained by the following story:

Six months before, the patient, being somewhat under the influence of drink, in a row received a blow from a fist in his face, while he had his pipe in his mouth. Immediately, without feeling any severe pain, he spat a little blood and noticed that the end of his pipe was broken; the amber end-piece was missing, and could not be found in spite of all searching for it. During the night the tongue swelled considerably without being very painful. This swelling partly subsided after using gargles, but since that time the tongue had not at any time resumed its normal, previous volume.—*Le Bulletin Medical*, 1896, 3, page 16.

The Dental Digest.

Vol. II.

CHICAGO, SEPTEMBER, 1896.

No. 9.

Original Contributions.

SUGGESTIONS ON CROWN WORK.

BY H. W. ALLWINE, D.D.S., OMAHA, NEB.

To make sharp, well-formed cusps by the Hollingsworth system, make the counter-die as directed. Smoke this, place it into the rubber ring and pour upon it Melotte's metal, nearly cold. Scrape from the die about the thickness of the gold to be swaged. Anneal the gold, partly swage, anneal again and drive home.

If the Hollingsworth cusps be not at hand, select a tooth having the size and cusps wanted. Imbed it in sand or any investment, exposing the cusps as desired. Place a ring about an inch in diameter, made of brass or any other metal, around this, and pour into the ring, over the cusps, some of Melotte's metal. This will give a counter-die. Make the die as directed above.

The die may be made first by taking an impression of the cusps in plaster and pouring the metal, quite cool, upon this, when the plaster has become hard and dry.

The metal should always be poured when it is just hot enough to flow.

To make an all gold bicuspid or molar crown, I proceed as follows: Prepare the side of the crown so a wire measure at the neck may be removed without breaking the wire. Then take a plaster impression of the tooth. Place around this a metal ring. Fill the impression of all the teeth, except the one wanted, with plaster. From the tooth wanted bevel the plaster to the upper edge of the ring. When this plaster is hard and dry, pour into it Melotte's metal. Now cut away the metal well up the side of the tooth, representing the cervical margin of the gum, so the band will pass well

up. Dress the side of the crown so that the wire measure will pass over the metal tooth as it did over the natural one. This wire measure, cut and straightened, is the length of the gold required for the band. Fit the band down well all around and leave it long enough to extend just over the turn of the grinding surface. Scrape from the grinding surface of the metal tooth the thickness of the gold wanted here. Hammer and burnish the edge well down to the metal tooth and file it to a sharp edge. Now contour as desired. Place the band back on the metal tooth and, with hammer and soft wood, drive a piece of well annealed gold to a perfect fit over the cusps and end of the band. Solder and dress down.

Any broken off molar or bicuspid may be thus capped if it be first built up with cement.

ANESTHETICS IN THE CHAIR.

BY W. R. CLACK, CLEAR LAKE, IOWA. READ BEFORE THE NORTHERN IOWA DENTAL SOCIETY, AT SPIRIT LAKE, AUGUST 11-13, 1896.

From the earliest ages mankind has been seeking means of relief from pain. At the siege of Troy the Grecian surgeons sought to mitigate the suffering of the wounded by applying alcohol and carbolic acid to their wounds.

It is said that the ancient Assyrians compressed the veins of the neck to relieve the pain of circumcision. The Chinese, even in remote ages, had learned the anesthetic properties of a plant which was undoubtedly the Indian hemp. They used the drug for the purpose of blunting the sensibility of patients who were subjected to the operation of acupuncture.

A drug called Mandragora was also known by the ancients. It would produce insensibility and loss of consciousness for several hours. For anesthetic purposes it was infused in wine and was used by surgeons at the commencement of the Christian era.

The "wine mingled with myrrh," spoken of in Mark 15, xxiii, offered by the kind-hearted Jewish women to Jesus on the cross, was unquestionably this same Mandragora wine, for it was the custom to give this pain-defying mixture to those who were undergoing the pains of crucifixion. It is said that Jesus refused to partake of this means of alleviating his sufferings, lest he might be charged with trying to escape the Divine will. I have personally met this

same superstition in people who believed it to be contrary to Divine will for a woman to try to escape the pains of child-birth by the use of anesthetics.

A curious passage in an old volume on natural magic, composed by Jean-Baptiste Pesta, describes the preparation and administration of certain volatile substances, of which the effects appear to have closely resembled the effects of ether.

Experiments have been made from time to time with various drugs with varying degrees of success until we have the positive anesthetic agents of the day. By their use pain can be almost wholly eradicated from surgical operations.

The earlier authorities on anesthesia believed that insensibility was produced by a mechanical pressure of the blood on the brain, but more modern research shows this to be false, as ether, chloroform and like substances do not exist in a vaporous condition within the body. They are dissolved in the blood and exert no more pressure than is exerted by the current of the blood itself. This pressure may even be diminished as the phenomena of anesthesia are intensified.

Other observers have advanced the idea that the anesthetic state is really a condition of asphyxia. But the chemical composition of the blood is not changed during the anesthesia in any way that would be consistent with such an hypothesis; the blood does not even exhibit the blackness that is so characteristic of asphyxia.

There can be no doubt as to the duty of the dentist to use some agent to mitigate the pain of extracting. There is no pain from which humanity shrinks as it does from this. I have been told frequently by patients who had had experience in both matters that they would rather undergo the pain of confinement than of extracting. From youth to old age it is the same; in fact I believe the more times one faces the ordeal the worse he dreads it. The question is, which of the agents shall the dentist use?

While statistics show the larger number of deaths to have occurred from the use of chloroform, I still believe that for protracted operations it is the best, as it is more positive in its action, less exciting and less liable to cause nausea. Out of 492,235 inhalations of chloroform we find eighty-four deaths, or one in 5,860, but it must be remembered that the conditions under which it was used were less favorable than in the dental chair.

Chisholm states that during the twenty-eight years from the time of the introduction of chloroform there were only two deaths by its use in the Royal Infirmary at Edinburgh. During the last ten years of that period he estimates that there were 36,500 cases of chloroform anesthesia, with only one death. Elser, of Strasburg, had used chloroform 16,500 times without a single death. During the Crimean war chloroform was given 30,000 times, with but two recorded deaths. When it is remembered that in many of these cases it was given to men torn and mangled by shot and shell, and too often by unskillful assistants, we must hold this agent in high esteem. Ether, according to the same table, shows six deaths in 99,255 inhalations, or one in 16,542, but it is so slow to act and excites the patient so much, produces so much nausea and leaves the patient in such a deathlike stupor for so long that it is not a pleasant agent to use in the chair.

Although the mixture known as "A. C. E." is highly recommended by some authorities, within my observation it has not proven a success. It is in my opinion an unscientific preparation, from the fact that ether is so much more readily evaporated than either of the other agents that the administrator is ignorant of the nature and strength of the mixture he is giving. If it could be thoroughly vaporized before administering it would be a safer agent.

As to the various local anesthetic preparations on the market, in which cocain is the active principle, more or less use of them for ten years has not inclined my heart toward them, and the views of a prominent physician, than whom there is no better posted man on antiseptic surgery in the state, cover the ground so fully that I quote them in full:

"You ask me for my opinion of local anesthesia by hypodermic injection into the gums for extracting. In the briefest manner possible I would say that in my judgment, from both a practical and theoretical standpoint, it is unsurgical and unsafe, attended indeed with grave danger. There have come under my observation and treatment a large number of cases in the last few years where this method has resulted in ulceration, sloughing and even caries and necrosis of the bony structure of the maxilla. It is my belief that no amount of care as to cleanliness and antiseptic precaution will obviate these dangers, for the reason that in extracting you open up the cells and canals of the bone, in a locality highly endowed with

blood vessels and nerves, and infection is very much more liable to occur under such circumstances than where an injection of morphine, cocain, or other substance is made into the soft parts with unbroken vessel walls. These dangers, in connection with the danger of toxic effect, make it in my mind a more dangerous drug to use than chloroform."

Since in 1844 Horace Wells had the first tooth extracted under the influence of nitrous oxid gas, no agent has been discovered which so fully fills the long-felt want. Twenty years' use of it has convinced me of its superiority over all other anesthetics for minor surgery. It is quickly administered, is easily taken, does not have the irritating effect on the throat that chloroform or ether has, produces no nausea, and is so safe that Lyman has found only eight cases of death under its influence, and the evidence in these cases does not by any means substantiate the claim that the deaths were due directly to the effects of the gas. In one case he says of the patient: "He was in the last stages of consumption and death was ascribed to that cause." In another he says: "She did not take enough to produce insensibility, but was taken ill on the next day and died on the following. Her death was attributed to the inhalation, but there was no evidence to substantiate such an opinion." Another was caused by asphyxia from a cork that was used to keep the jaws open becoming lodged in the pharynx. For twenty years I have given it to all ages of patients, from the child to a lady 83 years old. I have given it to persons in robust health and to some so ill that I was obliged to administer it to them in their beds. I have found a few persons that I could not reduce to complete anesthesia, and two who became so excited after a half-dozen breaths that they screamed and would kick and fight like demons. On withdrawing the inhaler they both inquired why I had not continued and taken the teeth out, insisting that they had not made a loud noise. A second trial gave the same result, so the effort was abandoned.

I have never had any bad results follow its use but once, and I leave it with you to decide if the gas was responsible for that. I have given it to married ladies in all stages of delicate health and never had any ill effects but in this case. One day, about seven years ago, a lady came to me saying that she had come to town to have a tooth out but was so nervous that she could not have it drawn

without taking something. She thought she was within six weeks of confinement. She took the gas very nicely, did not feel any pain, and went on her way rejoicing. About six weeks afterward her physician told me that he had just delivered Mrs. Blank of a dead fetus not entirely developed, and that the lady told him that she had not felt any motion since she took gas to have that tooth out the time the team ran away while going to town and threw her out.

For another reason I believe gas to be the safest anesthetic for the dentist to use. No jury in the land, after once seeing gas administered, would believe it possible for the dentist to take any improper liberties with his patients while they were under the influence, and the same cannot be said of the stronger anesthetics. While the latter may have been used for improper purposes, I believe that many a man has been charged with taking liberties with his patients when he was innocent, but I believe it to be impossible for any such thing to occur during a gas administration.

Although it is not imperative that the dentist have an assistant present, it is better for him to do so, but I have had many cases where the patient would not permit any other person to be in the room, and I have never felt the slightest fear that my acts would be misconstrued.

I frequently use gas when I want to "go after" a nerve, and for lancing felons, carbuncles, reducing dislocations and removing ingrowing toe-nails there is no anesthetic equal to it. From one and a half to two minutes to give it, and twenty to forty seconds to recover from its effects, is all the time required.

I do not believe that as a class dentists are inferior to our cousins, the physicians, in our ability to learn to handle anesthetics, and there is no reason why we may not learn to use them as skillfully. I find that in my eighteen and a half years in Clear Lake I have administered anesthetics for my own and the patients of others 3,568 times, and though I have much more yet to learn, it does not set very well to have some downy-lipped M. D., on whose diploma the dust of six months has fallen, tuck his thumbs in the armholes of his vest, bulge out his eyes and his chest, and ask in great astonishment, "You don't mean to say that you administer anesthetics without a doctor, do you?"

I do not believe that all men could learn to give anesthetics. There are no doubt some who are too timid—I make a distinction between a

careful man and a timid one; and if you are a careful man, with sufficient nerve to act promptly in case of an emergency, there is no reason why you should not learn to use anesthetics "without a doctor."

And if you conclude to do so remember that the deaths from nitrous oxid gas are less than one in a million, that it is the best anesthetic for minor surgery, that there is no reaction following its inhalation, and that when gas is pure it has no more taste or unpleasant odor than common air. You can express it all in these few words—it is safe and effective.

PRESIDENT'S ADDRESS.

BY DR. E. D. BROWER, LE MARS, IOWA. READ BEFORE THE NORTHERN IOWA DENTAL SOCIETY, AT SPIRIT LAKE, AUGUST 11-13, 1896.

Members of the Northern Iowa Dental Society: We are here assembled for the second meeting of this Society, organized at Clear Lake, September 2, 1895. The object—mutual benefit of the dentists of Northern Iowa. To reach a greater number of men and interest them in society work. To oppose nothing, but rather to advance the interest in our state society.

The members of the state society will all agree with me that there is far too small a per cent of the dentists of Iowa members of that body. The question arises, How are we to increase that membership? Create an interest in society work by the organization of local societies. Show the young men that they are benefited by society work.

The dentists of Northern Iowa are principally young men located in small towns and having little association with other dentists. We may read journals, but we must meet each other and discuss the various branches of dentistry in order to keep abreast of our profession.

Now, as to the line of work that we should pursue. What will be of the most interest to our members? What line of work will our membership be able to handle best? We go to the American, our national society, the work is scientific. There are a few men who are leaders of our profession that do this work. Our state society should give us a mixture of the scientific and practical. Here we have a greater number that can enter into the work. In our little Northern, made up principally of country dentists, and most of us

young men needing to be brushed up on our practical every-day work, our principal opportunities to meet brother dentists to talk over our life-work are at society meetings, so here our principal work will be discussions and clinics on our every-day work.

Take, for example, that neglected piece of work, cleaning teeth. How many of you think that you can clean teeth? Every one. How many can? Very few. How many of the few do the work the best they know how? Not one-half. Why? Because they do not rub up against their fellow practitioners freely—not in the unpleasant competition of the tradesmen, as so many class themselves, but in friendly discussion.

Another thing to which I wish to call attention. I find in my visits to societies the following: A man reads a paper, or he gives a clinic; we hear on all sides, "That is nothing new, I do it myself." Well, what of it? You should be interested to know that someone else says that it is right. Say so yourself in the discussion. If you don't agree, say so right out in the meeting. Don't go to the meeting expecting to hear something new to yourself in everything that is said. Attend every session; listen to every thing that is said, and if you do not hear a thing that is new to you, go home happy to know that you are right in your own practice.

I do a great many things in my every-day work that I want to know from someone else whether I have done right or wrong. It must be a very self-satisfied man that does not. Show me a man who has been located in a small town from five to ten years and has never attended any meetings of his profession, and never visits any of his brother dentists, and I will show you a man who is egotistical, who thinks that he knows it all—a man who is neglecting the little things about his work and consequently doing poorer work each succeeding year. There is one thing to which I wish to call especial attention, and that is the Dental Protective Association. I find that a great many of the younger men in the profession have a wrong idea of the Association, or do not realize the great good that it has done for them. Gentlemen, the Protective Association is saving you from one hundred to two hundred dollars each year. Only three thousand out of seventeen thousand dentists of the United States have paid the expenses. Will you who are not members stand idly by and allow the men who have paid the bills the past ten years to double their subscription to carry on the work?

And now a word for myself and the society. You have given me an unexpected and unearned honor in electing me your second President. I thank you. The other officers and committees have worked hard to make this session a success, although having but little money to work with. I hope none will go home regretting that he came. Let us strive to make this society a power to be felt in the state. We have with us dentists from various parts of the state and from other states.

We welcome you in our midst. Join our society and become one of us. We have no boundary lines.

PAINLESS OPERATIONS.

BY DR. GUSTAVUS NORTH, SPRINGVILLE, IOWA. READ BEFORE THE NORTHERN IOWA DENTAL SOCIETY, AT SPIRIT LAKE, AUGUST 11-13, 1896.

This is a subject which should interest both operator and patient. It is easy for a dentist, when his victim is properly arranged in the operating chair, dammed, clamped and weighted down, to stand by, with foot, motor or electric power, and cut and shape a sensitive cavity, while with a little bur he plays Yandee Doodle upon a sensitive nerve fiber. The patient's eyes bulge out, he stammers, stutters and moans, and with an uplifted hand and a fierce angry look at you he cries, "Stop! Stop!" We stop and inquire, "Did I hurt you?" "Yes, you were cutting right on the nerve; can't you fill my teeth without hurting?" Now, that's the question.

The man who can perform dental operations without pain will be the coming dentist. I have come to this conclusion, that all dental operations can be performed with but little pain, if the dentist be a skillful operator.

Now, gentlemen, don't commence to shake your heads or whisper to your nearest friend that you do not believe this. Do not take advantage of my absence and say anything you will be sorry for. I mean just what I say, that all dental operations should be performed without pain. Children, the most sensitive patients with whom we have to contend, come and go laughing from my office. A child is a bundle of sensitive nerves and should be treated accordingly. We must gain the confidence of our patients—whether they are young or old; and to keep their confidence we must treat them

kindly and honestly. I have no time for a dishonest dentist, one who will advise one thing and practice another.

I will present only a few cases in this short paper, showing how I perform painless operations.

First operation: Deciduous tooth, cavity sensitive. Wipe the cavity dry, then bathe with creasote and again dry the cavity, remove decayed substance with a sharp excavator, cutting from the center toward the border of the cavity, with a lifting instead of a downward movement, and the operation can be performed without pain.

Second operation: Permanent tooth, cavity sensitive, patient in his teens. Apply the rubber dam, dry the cavity with hot air, and bathe with creasote. In a few seconds wipe this out, moisten with alcohol, and again dry with hot air; then remove all foreign substance with a sharp excavator or bur, cutting toward the border of the cavity, with a lifting instead of a pressure movement. After all foreign matter is removed, if the cavity is too sensitive to cut and prepare for a gold filling, use cement for the filling, keeping it well protected from the secretions of the mouth for some time, and this filling will be very durable; then in a few months it can be painlessly refilled with gold.

Third operation: Extracting teeth. Most dentists use anesthetics in their practice, but at dental societies they ignore the whole thing and class it as unprofessional. Class it as you please, teeth can and should be extracted without pain by using a general or local anesthetic. What I term a general anesthetic is ether, chloroform or gas.

Gas is my preference, and I have used it for many years with success. It should be administered as follows: The patient should be seated in a reclining chair, with the clothing properly loosened, and the mouth-prop applied to admit of ample room to operate. The whole operation should be performed with as little demonstration as possible, but the operator should closely watch the respiration, and as soon as the anesthetic stage is reached, which generally requires from 30 to 45 seconds, and is easily observed by the condition of the eye and respiration, all instruments should be in readiness and the operation speedily performed. The time required in administering gas, from the start until the patient fully recovers, is from 2 to 2½ minutes.

I have never had an unfavorable symptom with gas, but I admin-

ister it with great caution. If the patient is in an excited condition, a few minutes' conversation will remove all fear and he will submit without a struggle. When a patient is unruly or difficult to manage it is generally the fault of the operator in not understanding the action of the gas and the temperament of the patient.

I use the following local anesthetic with good results by the aid of a hypodermic syringe:

Cocain hydrochlorat	gr.	x
Sulphate atropia	gr.	$\frac{1}{20}$
Car. acid crystals.	gr.	$2\frac{1}{2}$
Chloral hydrate	gr.	$2\frac{1}{2}$
Water	oz.	j

The success of a local anesthetic depends greatly on the manipulation of the instrument. The medicine should be injected without pain, and this can be done if proper caution be taken. First wipe the gum dry and then bathe with the preparation; commence by injecting the medicine just under the margin of the gum on each side of the tooth, wait a few seconds, then press the needle a little farther up. At the third, which is usually the last injection, I insert the needle deep into the tissue, and it is painless at this stage of the operation. I generally use from 4 to 6 minims of the drug. This preparation can be used with safety, but of course the success will depend greatly on the temperament of the patient. I will now leave the matter with you for discussion.

THE MOUTH-MIRROR.

BY DR. H. B. TILESTON, LOUISVILLE, KY. READ AT THE TWENTY-SIXTH ANNUAL MEETING OF THE KENTUCKY STATE DENTAL ASSOCIATION, AT LOUISVILLE, JUNE 16-18, 1896.

To my mind the mouth-mirror is by far the most useful instrument to be found on the operating table of the dental surgeon. So varied and numerous are its uses that it may be referred to as a veritable *multum in parvo*. Not only is it useful to reflect to the eye of the operator the surface upon which he is working, but it also serves to direct and condense the light upon this surface. It may be employed as a tongue-depressor, a cheek-distender, a mouth-dilator, as an assistant to hold pieces of gold or amalgam while being condensed to place, to hold pellets of absorbent material, and even as a matrix. Or it may often serve in several of these capacities at one time.

For example: When a patient is seated in the chair, my first move is to take the mouth-mirror in my left hand and there it remains, serving in all the capacities above mentioned from time to time. If by any chance it be mislaid, I cannot proceed until it is found and restored to my hand. To me, therefore, it is indeed the most useful of instruments. I do not know whether I find more uses for the mouth-mirror than other operators or not, but there is one method of using it to which every operator should accustom himself, and if I can, by speaking of it here, cause anyone who has not done so before to school himself to so use it, I shall have done something worth the doing.

I refer to the most common of all its uses, that of reflecting the surfaces or points upon which we are operating. In excavating and filling cavities in the superior bicuspids and molars, on the morsal, mesial, distal or palatal surfaces, or upon the palatal, mesial and distal surfaces of the superior anterior teeth, I never see anything but the reflected image of the tooth. And my habit of so operating has saved me many a tired, aching back, and perhaps by this time a permanent deformity in a crooked spine and contracted, diseased chest.

In operating upon the class of cavities just mentioned, the chair should be low and tilted back but slightly, the operator should stand upright at the side of patient's head and to the rear of chair, so as to be entirely free from contact with the body of patient. Holding the mirror in the left hand, the left arm is rested lightly upon the arm-support attached to the side of head-rest, in which posture the glass may be held steadily in any desired position or angle, both reflecting the image of the tooth to the eye and directing the rays of light into the cavity. This position gives the operator the greatest freedom of movement of the right arm and shoulder, which is not the case where the body is bent over to the right to look directly into a cavity in the upper teeth, for then the shoulder and upper arm are so cramped as to be entirely ineffective, and only the wrist is free to move. Then again, in this latter position, the eyes are hampered in their vision, and especially in their power to accurately gauge distances, by being brought into a vertical instead of horizontal position.

When looking into the mouth-mirror at the image of a tooth which is between the eye and the mirror, the apparent distance of the tooth

is increased by the distance between the mirror and the tooth, which enables the operator to obtain a focal distance more agreeable to the eye than the object itself would give. Consequently the eyes endure the strain without exhaustion. A position above and back of the patient also gives the operator escape in a large measure from the poison of foul breaths. Aside from these considerations of greater efficiency and comfort of the operator, it is disgusting to see a man lay himself all over a patient in order to see directly into a cavity in a superior tooth.

Now this instrument being one that is used constantly in the mouth, and in so many mouths, being placed in direct contact with the mucous membrane, often in a diseased condition and bathed in saliva always more or less vitiated, it follows that the mouth-mirror should receive the most careful attention as to its cleanliness and asepsis. Unfortunately, mirrors are so constructed as to afford lodgment for septic material in abundance, and are difficult, because of their construction, to render thoroughly aseptic. The ideal mirror in this respect is yet to appear, and he who brings forth a mouth-mirror fulfilling every requirement of asepsis will confer a great boon upon the dentist and a greater one upon the patient.

An ideal mirror would be a plain disc of some hard metal capable of receiving a high polish that could be renewed by the dentist himself by repolishing as needed. Such a mirror could be boiled in water and rendered aseptic in five minutes. But there is no metal that will receive such a polish as is necessary to reflect an unbroken image and give the depth and perfection of a glass mirror.

The nearest approach to a solution of the problem that I have seen is the mirror made with a screw-ring to hold the glass in the frame. This ring may be taken off, releasing the glass, which, when damaged, may be replaced by a new one. The frame may then be boiled to render it aseptic before another glass is replaced. To avoid the oxidation of the ring-thread by saliva and antiseptic solutions used to disinfect the glass and frame while together, thus making it impossible to remove it, and also to seal up all crevices into which septic matter could penetrate, I adopted the plan of melting paraffin or paraffin wax into the empty frame and over the threads of the screw, and while still fused setting in the glass and screwing down the ring, thus sealing it up effectually against the entrance of anything fluid or solid. The same plan may be fol-

lowed profitably with the ordinary mirror by turning up the edge of the frame, removing the glass and resetting it in a bed of paraffin or cement, and reburnishing the upturned edge of frame back against the glass.

To keep any kind of a mouth-mirror reasonably aseptic I have a small vessel like a watch-crystal or other shallow dish on my operating case constantly filled with electrozone, a solution of chlorides, and a powerful antiseptic. After each patient, and frequently during the sitting of one patient, I dip the glass and such parts of the frame and handle as come in contact with the mouth into this solution and wipe off thoroughly. Before doing so, however, I of course wash off any visible contamination with water. I use the full strength of the solution of electrozone, called dental meditrina. As a further precaution I keep in the drawer of my cabinet, where my mirrors are, a slab of plaster of paris and sand saturated with Formaldehyd, as recommended by Dr. Cassidy a few years ago.

But in spite of all the precautions it is possible to adopt with a glass mirror, such as we are compelled to use for want of anything better, we may still be quite sure that it is *not* thoroughly aseptic at any time. Still it may be rendered at least innocuous by taking the precautions I have mentioned, and it is our duty to be religiously attentive to every detail of cleanliness that will tend to protect our patients who trust themselves to our care from anything septic or unclean.

CORROSIVE SUBLIMATE.—The following note on the use of corrosive sublimate as a fixing reagent is published by Mr. S. E. Denyer, in the *Guy's Hospital Gazette*: A saturated solution should be used; this is best made by putting excess of HgCl_2 into boiling distilled water, allowing it to cool and crystallize, which insures complete saturation at the then temperature and pressure. It will be found that the addition of a small quantity of sodium chloride—about one-eighth that of HgCl_2 —gives better results than the HgCl_2 alone. The tissue should be cut into pieces not more than four mm. in thickness, as the penetrating power of the HgCl_2 is only two mm. or thereabouts. Allow it to remain in the solution for from six to twenty-four hours, according to the nature of the tissue. Those tissues which include skin should not be left more than six hours, as they tend to become very hard, and this causes trouble in cutting. Wash thoroughly in water for twenty-four hours, then transfer to a mixture of Sp. Vin. Meth. and water, equal parts, for twelve or twenty-four hours, then to Sp. Vin. Meth. for two or three days. After this, dehydrate with absolute alcohol, clear with toluol, and embed in paraffin.

Digests.

The Dental Cosmos for July, 1896.

"CYSTS, THEIR TREATMENT BY CURETTING," by Dr. D. E. Wiber, Washington. Read before the union meeting of the Maryland State Dental Association and the Washington City Dental Society, at Washington, May 8, 1896. By the term cyst is meant a collection of fluid, non-inflammatory in its nature, generally encompassed by a sac or bag. In contradistinction between cyst and cystic tumors, I might add that a cyst contains within it nothing observable as a new growth and all its fluid is inclosed in one sheath sac; hence the terms "a cyst," and "cystic," convey lucid and distinct ideas of the nature of any tumor. A cyst, unless accidentally ruptured, is a permanent and usually a persistent swelling, with contents varying in character as well as consistence.

These forms of morbidity receive their distinctive names from the character of their fluid; thus we have the serous, mucous, synovial, colloid, dermoid, sebaceous, seminal, milk, salivary and sanguineous. Fortunately but few of the above named are discovered in the oral cavity. Again, when classified they are denominated as exudative, new formation, retentive, congenital and parasitic cysts.

The cysts most commonly found in the oral cavity are: ranula, alveolar, dentigerous and mucoid. These are all of the epithelial variety, and are developed either from glands or remnants of encysted enamel-organs. There is another class known as inflammatory cysts, which follow the destructive work of an alveolar abscess.

The principal location or favorite site of a cyst is generally in the neighborhood of the incisors, bicuspid, and the first molars of the superior maxilla. In the inferior maxilla their determination is at or near the first molar; they appear either single or multiple.

Their origin is probably confined to the cancelli of the bone, and in many instances they are caused by irritation, either slight or severe. A cancellus being filled with fluid or semi-fluid, expands and produces absorption and obliteration of intimate cancelli, until a cyst of considerable size, ranging from a pin-head to a hazel-nut in dimensions, is formed. Many times this process is continued until the

walls become membranous and the macerated bone shows great gaps in its continuity. These spaces are filled with medullary or myxomatous tissue.

The external layer of a cyst is established by the gum, which bears the unmistakable signs of an inflammatory degeneration. This is followed in turn by the periosteum, composed of coarse interlacing bundles of fibrous connective tissue, with mucous inflammatory areas. The bony wall of the alveolus has become reduced. The outer wall of the socket remains apparently undisturbed, and the cancellous bone-tissue has been reduced to a scanty bone formation by the inflammatory process.

The diagnosis is comparatively easy if a few points are borne in mind while making your examination. This should be by inspection, palpation, percussion, and, when there is doubt, the aspirator may be required. By inspection notice the locality; if near the first superior molar differentiate between it and empyema. In empyema remember the catarrhal symptoms in the nasal cavity; also, that by pressure the cyst may occupy the cavity of the antrum. When palpation is undertaken bear in mind that a cyst is more or less tense, hence elasticity, fluctuation or undulation become the objective symptoms to be relied upon. In percussion we have a very decided dull sound emitted. Soreness upon shock depends largely upon the inflammatory symptoms. The aspirator will always give satisfactory evidence of the nature of the growth and can be depended on for a diagnosis of contents, aided by the microscope.

The history of the case will perplex rather than aid the attendant. The patient will complain of very little pain if there is but little inflammation present; there may, however, be some headache, accompanied by a dimness of vision, more or less confined to the affected side. The growth of a cyst is usually slow; this point should be valuable in diagnosis; also that these growths are generally formed in individuals of poor constitution.

In the treatment of this condition by the method I am about to outline, the rigid practice of asepsis is urged; the operator's hands, the oral cavity as nearly as possible, and the instruments to be employed, should be thoroughly sterilized. The soft tissue adjacent to the field of operation, as well as the central point, should be locally anesthetized with cocain. The first incision is made over the greatest elevation of the protuberance, the length of the diameter of the

swelling at its base; this incision is carried directly down to the bony tissue; the parts are dissected back and cleansed, all bleeding arrested by a hemostatic. A circular trephine, mounted in an engine hand-piece, is then introduced and a section of the bony process removed. The sac, or outer covering of the cyst, is now exposed and incised; the contents should be examined, and if other than fluid, all foreign substance is removed. The sac should be obliterated by means of a curet. I have used for this purpose the right, left, and straight spoon excavators, scraping the inside of the bony cavity thoroughly, using very little force in the operation. When satisfied that there remains none of the cyst covering, the wound is carefully washed out with warm water containing an antiseptic preparation. The cavity is then packed loosely with sterilized gauze, and the patient dismissed. At a subsequent visit, possibly the third day, remove the gauze, cleanse out the cavity, and allow the wound to heal by granulation. This will be accomplished inside of ten days.

In pursuing this method I have met with astonishing results in two cases. The operation was painless and radical, the obnoxious swelling was permanently reduced inside of a brief period, and the wound healed rapidly with no depression over the seat of disturbance.

Translations from German Journals, by Dr. B. J. Cigrand.

PULP EXPOSURE. In the event of recent exposure of the pulp we recommend applying a paste made of iodoform and glycerine, covering same with a small piece of asbestos paper and protecting the entirety with cement. As soon as the cement has thoroughly set a gold filling may be inserted without fear of resulting pulpitis. —*Zahnärztliches Wochenblatt, July, 1896.*

A NEW HÆMOSTATIC. Dr. Frohman, a dentist of Berlin, has recently given to the profession the results of his experiments on Ferripyrin, and states that it has great hæmostatic properties. Its application to more than 100 stubborn cases of bleeding gave excellent results. Post-hemorrhage seldom resulted, and when it did further application caused permanent arrest. There are no painful after-effects and it yields perfect coagulation. Ferripyrin is a combination of one part ferric chlorid, three parts antipyrin and five parts water. It is a dark red liquid and can be purchased at the drug stores. It has an agreeable taste and is readily applied. In

case of a lower extraction employ a small spoon and direct a sparing amount of the mixture into the socket; in the event of an upper case apply a saturated pellet of cotton to the socket. It gives immediate relief and one application usually suffices.—*Journal für Zahnheilkunde*, June, 1896.

COCAIN AND ANESTHESIA. The anesthetic effects of cocain are materially aided and a more certain condition assured if the liquid be slightly heated (90° F.) before injecting. Not only does anesthesia set in sooner, but it also lasts longer and is more decided. A weaker solution under this method may be employed and thus lessen the risk of producing cocain poisoning.—*Zahnärztliche Rundschau*, July, 1896.

FILLING DEVITALIZED TEETH. The following method has been highly recommended by Dr. C. A. Firthe, as being very efficacious in filling canals:

Thymol,
 Mercuric chlorid, â â 2 grams.
 Carbolic acid,
 Tannic acid,
 Morph. muriat, â â 1½ grams.
 Ol. menth. pip.,
 Ol. cassi, â â, eq. parts.
 q. s. to form a paste.

My experience during the last three years with bicuspid and molars has been exceedingly satisfactory, and the following is my method of procedure: Subsequent to the complete devitalization of the pulp by the use of arsenic I employ a small piece of cotton saturated with ol. caryoph., apply same to the exposed pulp and seal it in the cavity with creamy cement and permit the medicine to remain in the tooth three days. At the expiration of this time I apply the rubber-dam and proceed to clean out the contents of the pulp chamber with a large bur, previously dipped in carbolic acid. I next cleanse the cavity by the application of a 50 per cent solution of Na H O and wash the chamber and canals with oil of cassia and spiritus vini rect. (1 minim in 20 grams), dry the cavity with hot air and fill the pulp-chamber with the above paste. Employ bone or ivory instruments in packing it. The paste is then thoroughly covered with tin or gold foil. Fill the cavity one-third with cement

and the remainder with amalgam or gold.—*Vierteljahrsschrift für Zahnheilkunde*, July, 1896.

FORMALIN IN DENTAL PRACTICE.—Abraham is quoted as follows: By the use of this substance he has been enabled to avoid that form of secondary periostitis that so often complicates the treatment of periodontitis. It is his belief that the vapors of formalin have a regenerative influence upon the diseased periodontium and promote *restitutio ad integram*. The method of formalin treatment made use of by the author more recently is less complicated, and less likely to cause pain by the formalin accidentally overflowing on the surrounding tissue. He makes use of a powder, calc. sulphas., 200; hydrarg. bichlor., 4. These to be finely mixed; also a liquid form, acid sulphuric, 32; formalin, 100; aq. distil., 100. A few drops of the liquid are rubbed on a glass plate together with sufficient of the powder to form a paste, which, introduced into the previously dried root-canal, solidifies in a few minutes. The crown can be filled with any stopping desired. The small quantity of corrosive sublimate and sulphuric acid in the paste does not have any discoloring or corrosive effect on the tooth. The above proportions have been found to be the best as a result of numerous trials, and this formalin root-cement may be employed safely after cautery of the pulp, etc., and for closing the foramen piacale. In a few cases, after employing this cement a slight periostitis without pain has appeared; continuing only one or two days.—*Zahnärztliches Wochenblatt*.

Pacific Stomatological Gazette for August, 1896.

"CONGENITAL DEFICIENCY OF ENAMEL," by J. L. Asay, M.D., San Jose, Cal. Read before the Stomatological Club of California, April 14, 1896. The lesion which I present to you seems to me to be one of those rare cases of heredity of which we sometimes read but seldom see in such a total absence of enamel.

I first viewed the case, unfortunately, in a very hurried manner, as it presented itself during the hours devoted to patients who had regular appointments. So far as I had the opportunity to observe there is a complete absence of enamel of each and every tooth, both deciduous and permanent; the child being nine years of age. External appearance indicates a body well-nourished and in perfect health. There is the cicatrix from an operation performed when six

months old for hair-lip, which is about four lines to the left of the filtrum. The arch is somewhat higher than the average, but no signs of cleft palate.

Being taken by surprise I confess to having been too hasty in forming an opinion regarding the etiology of the lesion and at once hazarded the conclusion that it was one of those sequela of the exanthemata, and without further inquiry proceeded to the consideration of how to correct the deformity without doing the child manifest and subsequent irreparable injury.

Upon a subsequent call of the mother to my office I had a leisure half-hour and made further inquiry into the case, and to my amazement was informed that the child had never been sick a day in her life, save those ephemeral complaints incidental to infancy; that the mother had uninterruptly enjoyed good health throughout the period of gestation, and that her teeth were in the same condition as her daughter's before extraction and crowning. I at once examined the mother's mouth and am confident she is correct in her statement, for I found this state of facts existing. She is wearing an upper artificial set of teeth on rubber base. The lower incisors and cuspids are restored with Richmond crowns, but the bicuspid and molars remain, or at least did remain, until I extracted this lower third molar, yesterday, for reasons quite justifiable to myself and patient.

An inspection of this will show what I found to be the condition of the remaining natural teeth—that is, the entire deficiency of enamel, except a ring at the gingival margin. There was no other oral deformity; signs of hare-lip or unusually high arch there were none.

Judge of my still further surprise when the mother told me her father's teeth exhibited the same characteristics in every particular, and that he also had been operated upon for hare-lip in early life.

Still ascending in the scale of almost incredulity, she informed me that her grandmother's teeth were in a like manner entirely devoid of enamel, but how much further back in her ancestry this deformity extended she had no knowledge, other than that tradition said there had always been one in the family for generations back who presented this condition. I was further impressed with the information that this deficiency was confined to but one member of the family of brothers and sisters in each generation, the others having healthy mouths, with teeth strong and well preserved.

Thus we see that this deficiency of enamel, either total or in part, has continued to a certainty through four generations—the great-grandmother, the grandfather, the mother, and now—but who shall dare to say lastly—the daughter.

I have thus merely given you the facts as I found them and the information imparted to me. Neither mother nor daughter has ever been afflicted by scarlet fever, measles, variola or other exanthematous diseases; nor is there any history of these eruptive fevers in any of the parents or grandparents, but all for generations back—as far as the family sayings go—were physically and mentally perfect, except in the matter of the hereditary lesion referred to.

I will simply state that my advice to the mother as to the corrective agents to be employed was to do nothing for the present, save cleansing and arresting caries, but when all the permanent teeth have been fully erupted except the third molar, when the arches have been fully developed, then a series of crowning for each tooth can be indulged in which will be durable and a comfort and pleasure to the little patient.

I should operate only when the social accomplishments invite every young lady to present her best personal appearance. I would relieve her as early as possible of the mortification she would naturally feel from so great a deformity at that time of life when she is making new friends and looking forward to her own settlement in life.

My advice is to crown then but not before, and on no account to extract the teeth and substitute plates.

“SOME EXPERIENCES IN THE ADMINISTRATION OF NITROUS OXID GAS,” by Mayo A. Greenlaw, D.D.S., F.C.S., San Francisco. Read before the San Francisco Dental Association, August 10, 1896. We find when administering gas that the suspension of breathing is very uncomfortable and often distressing to the patient, and this must be overcome. I do not mean the hysterical condition affecting persons, that comes from the gas, but I mean the suspension from physiological causes. I have found three causes or kinds.

The first will take place immediately on loss of consciousness, when the patient, from fear or perverseness, has been persuaded against his or her will to continue breathing the gas. While volition lasts the sensory and motor ganglia, being as yet unaf-

fect, will carry out the feeling of resistance by a sort of mentality of their own, and breathing will cease. Sometimes this persistence will continue so as almost to produce suffocation. On removing the mouth-piece and pressing the finger against the fauces the patient will resume respiration with a gasp and you can proceed with the administration.

The second kind consists of those who exert themselves to breathe immoderately, deeply and rapidly, so that when the action of the lungs is no longer controlled by volition, breathing will cease from fatigue, and rest follow involuntarily for several seconds, sometimes requiring considerable effort to bring about a resumption of the normal action. In both kinds it is important to recognize early the cause and effect, and to apply the proper remedy promptly, remembering that while respiration is suspended the anesthetic effects are continually increasing, particularly that phase which is produced by what is known as want of oxidation.

The third cause of suspension is produced legitimately by the physiological effects of the gas and its accompanying asphyxia directly on the nerves which control the action of the diaphragm and lungs. To my mind this condition is caused more by the apparent asphyxia or want of oxygen than by the actual effect of the gas. Of course, an excessive dose of gas might produce this effect, as it has been reported in most of the cases of death in animals that the lungs ceased their action before the heart stopped beating; but in cases to which I refer there will be no indication of an overdose—in fact, it will sometimes take place before the patient is sufficiently under the influence of the gas to permit an operation.

The appearance presented by patients liable to these troubles will cause the operator to be on guard to avoid any danger. As, for instance, persons with dark-colored blood, as shown at the lip, will arouse suspicion, and you will notice that such people take very slow and shallow inspirations naturally. This shows that their blood is overcharged with carbonic acid; or, I may say, they do not breathe a sufficient amount of oxygen to relieve the blood of its accumulated carbon, and at the first inhalation the dark color appears and deepens. They will, apparently, be in good health, and, as far as their lungs are concerned, may be entirely free from any disease, but are seemingly particularly weak in their breathing functions, which will sometimes be as low as twelve to fourteen respirations to the minute.

And, as the gas is administered this discoloration increases, the breathing grows slower and less deep, and, should the administration be continued, would stop entirely.

Now, when one becomes familiar with this condition, admission of atmospheric air to the lungs is a great antidote for the ill-effects produced by the gas, in these cases especially, and all bad results are avoided.

Should respiration cease then every effort should be made by artificial respiration to restore it as quickly as possible, remembering that the condition of deoxidation is in a great part responsible for the effect. And as the heart's action is still going on, every second lost adds so much more to the depth of the pressure on the nerves already nearly paralyzed. There are a number of methods of artificial respiration, but any that will force the gas from the lungs will answer the purpose, and so restore proper breathing. A great many think these effects are produced more by the accompanying deoxidation of the blood than by the direct effects of the gas; and it is of interest that we should discuss just what the effects of gas are, and how produced. There are different theories on the subject. Some claim to produce anesthesia by over-oxidation, because of its containing another equivalent of oxygen as compared with atmospheric air; but it has been shown that it goes into the lungs nitrous oxid and comes out the same, with a little less carbonic acid, showing that no separation of the oxygen from the nitrogen takes place.

A late theory has been put forth that this gas has no anesthetic properties in itself, but that its effects are produced solely by the condition known as the want of oxidation or deoxidation of the blood. Now, if such was the case, any agent cutting off the supply of oxygen would produce the same effect, but there is nothing known that will produce this result in the same time.

Probably the most correct theory is that we have a double effect produced: one by the gas, which is as pure and legitimate an anesthetic or narcotic as any now known, and another the accompanying effect of deoxidation, which helps to produce the anesthesia, but which is responsible for the disagreeable symptoms, such as asphyxiating appearance, violent convulsive muscular contraction and twitching. Now, if this element that produces this condition could be removed, we would have one of the best anesthetics that could be desired for dental use. To meet this great desire it has been

suggested that the gas should be mixed with pure oxygen or diluted with atmospheric air; but, from what I have learned, this has not proved satisfactory. It is not admissible to dilute the gas with air, for you meet patients of such diverse constitutions that some will fail to come under the influence at all; some will require more than others, and, if diluted with air, complete narcosis is utterly impossible. However, the evil effects of lack of oxygen can be mitigated very perceptibly by allowing a little atmospheric air to pass through the nose when inhalation is about half completed. Not enough to counteract the gas, but just enough to supply a little oxygen to relieve the discoloration; and herein lies the secret of avoiding dangerous symptoms, which may be called "constricted glottis." By so doing I have administered the gas in this way to some patients without the least inclination to stoppage of respiration.

In long operations, where the patient has been under the influence from three to eight minutes, alternating with gas and air will cause the blood to be clear of discoloration or severe twitching, which is shown where the pure gas has been given.

A great many operators prefer the simple mouth-piece to the hood-piece, as the former gives you full view of the face and lips, while the latter covers them up and you cannot have proper view of them, except by raising the hood, and where you can see the discoloration it can be relieved to a great extent with very little trouble. I have used both and find the improved hood very satisfactory, as the arrangement is perfect for the admission of air at any time needed and shutting off the supply of gas.

British Journal of Dental Science for August, 1896.

"ORAL SURGERY," by Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S. Eng. Cancer of the Tongue. Sarcoma of the tongue is such a rare disease that it is only necessary to mention that a few cases have been recorded. Carcinoma, on the other hand, is of very common occurrence. It is remarkable that only one variety of carcinoma (viz., the squamous-celled epithelioma) affects the tongue. Any part of the tongue may be affected, but it is more common on the anterior half than the posterior and on the edges than on the dorsum.

The essential *cause* of cancer on the tongue is, like that of other

tumors, still unknown, but the conditions which favor its growth and development are more evident in the tongue than in any other part of the body.

Age has a most important influence. The disease is almost unknown before the age of thirty; the great majority of cases occur between forty and sixty.

Males are much more liable to the disease than females, the proportion being as great as six or seven to one. This is probably due to the greater prevalence of smoking, spirit-drinking and syphilitic affections of the tongue in the male sex.

The influence of inheritance as a predisposing cause of cancer has been exaggerated in past years, sufficient allowance not having been made for the effects of similar conditions affecting both parent and offspring.

Smoking and tobacco-chewing have no direct effect in producing cancer, but if they cause soreness or excoriation of the tongue they do to a certain extent act as predisposing causes. Cancer much more often affects a tongue which has been the seat of previous disease than a healthy one. Such conditions as leucoma, fissures, ulcers and scars, whether syphilitic or not, are well-known precursors of cancer, especially when they have been repeatedly irritated by caustics or other unsuitable remedies. Carious teeth, badly-fitting dentures, highly-seasoned food, strong drinks, the rough stem of a tobacco-pipe may all cause sore places on the tongue, and so act as predisposing causes of cancer.

Cancer of the tongue may *commence* in various ways; the first evidence of disease may be a blister, an excoriation, an ulcer, a fissure, a papule, a wart, or a lump. This variability is not due to any inherent mutability such as one sees in syphilitic affections, but to the number of different conditions upon which cancer may become engrafted.

A blister or papule very soon becomes a small excoriation or ulcer, so one description will suffice for the five first conditions mentioned above. It is but rarely that the first commencement as a blister or papule is seen, so soon do they become ulcerated. The ulcer thus formed is usually chronic and indolent, discharging but little, causing little or no pain, and showing no tendency to change; if on the border of the tongue, it stands out on a slightly raised base. As the result of continued irritation the ulcer slowly enlarges,

or the fissure becomes deeper. The surrounding area becomes a little angry and the base of the ulcer imperceptibly harder; the advent of induration is a most important feature and may be taken to indicate that the sore has become cancerous.

Small warty growths with well marked pedicles in young persons are of very little importance, but dense hard warty lumps in older subjects, especially when found on a leucomatous tongue, are very liable to become cancerous. This unfavorable change is indicated by the growth becoming larger and firmer, and by the surrounding area becoming indurated; ulceration soon occurs.

The least frequent way in which cancer begins is as a small lump or nodule in the deeper part of the mucous membrane. Such a lump is probably cancerous from the first. It slowly enlarges and projects upon the surface of the tongue and breaks, giving rise to a foul sore with everted edges, or allowing a fungous mass to protrude.

The *objective characters* of the fully developed disease are very striking, although differing considerably in different cases. Sometimes it forms a large prominent mass composed of several red raw tubers growing from a constricted base and surrounding a central depression occupied by a dark, greenish-gray slough resembling "the unfolding of some hideous flower, with its red and fleshy petals turned back, and a horrible mass of corruption hiding its pistil and stamens." Sometimes one-half of the tongue is transformed into a raised warty and granular mass of irregular form covered here and there with sloughs or coagulated pus, and broken by deep and irregular fissures. Sometimes the disease forms an oval ulcer devoid of granulations, but with a smooth glazed surface and its central part depressed. Occasionally the whole tongue is transformed into a hard inelastic substance like a piece of wood. Although ulceration occurs early as a rule, and is a characteristic feature, it is sometimes absent in cases of warty epithelioma, the growth resembling a simple papiloma but for its indurated base. A common form for the disease to assume is that of a deep foul excavation with raised everted nodular edges, and a surface covered with slough, pus and decomposing food. The glands beneath the jaw are early involved and assume the hard fixed character already described when speaking of epithelioma of the jaws.

The chief *subjective symptoms* are pain and salivation. Pain is often present from the first; it may be lancinating, aching or gnawing,

and frequently radiates to surrounding parts, especially the ear. In some cases the pain is so slight that patients do not seek advice until the disease has assumed very serious proportions. Pain is, of course, increased by taking food and by mastication. Salivation is not usually a source of much trouble until the disease is far advanced, but in the later stages it is very distressing and greatly aggravates the patient's sufferings.

The *course* the disease pursues depends to a large extent upon its position. If situated on the border of the tongue it tends to infiltrate the floor of the mouth and extend to the mandible. The tongue becomes fixed in the mouth and can no longer be protruded. When the disease commences at the back of the tongue it spreads to the epiglottis and even the larynx, or involves the arches of the palate and tonsil. The spread of the disease to neighboring parts renders speech and swallowing difficult and painful. When the tongue is fixed to the floor of the mouth and there is much salivation it is sometimes impossible to understand what the patient says. Fluids and soft solids can be fairly easily swallowed, but food which requires masticating and collecting from between the teeth is a source of great trouble.

The majority of patients die of exhaustion brought on by hemorrhage, pain, salivation, inability to take sufficient food, suppuration and want of sleep. The fatal result is often determined by the onset of septic pneumonia.

The *duration* of the disease in unoperated cases is about eighteen months from the onset, but many cases die within a year.

The *diagnosis* of cancer of the tongue in its advanced stage is usually a matter of no difficulty, but in its early stage it is often well nigh impossible to differentiate it from syphilitic affections, tubercular ulcers, innocent papillomata and simple ulcers and fissures, and the difficulty is increased by the fact that several of these conditions may be transformed into cancer by almost imperceptible gradations.

The diagnosis of a primary sore upon the tongue has already been dealt with. Secondary syphilitic affections are scarcely ever mistaken for cancer, but in the tertiary stage mistakes are easily made. An unbroken gumma may be mistaken for that sort of cancer which commences as a lump or nodule in the deeper parts of the mucous membrane. The resemblance between the two conditions may

sometimes be so close as to render diagnosis impossible; both occur for the most part on the dorsum, in both cases the lump is at first ill-defined, firm, and intimately associated with the tissues of the tongue, in both the progress of the disease is at first slow, and there is no affection of the glands. On the other hand gummata may be multiple, whereas carcinoma is nearly always single. A history of syphilis may be obtained, or there may be scars or other signs of previous syphilitic disease, but too much weight must not be attached to them, as cancer may occur in old syphilitic tongues. In these cases the effect of treatment by large doses of iodide of potassium may clear up the diagnosis. Gummata may also be mistaken for cancer when they have become ulcerated. In making the diagnosis the following points must be borne in mind: Gummata frequent the central portion of the tongue, cancer chiefly the borders; the edges of the gummatous ulcer are usually undermined, those of cancerous ulcers are raised, nodular and hard; gummatous ulcers are often multiple and are rarely so deeply or so widely indurated as cancer; the lymphatic glands are scarcely ever affected in tertiary syphilis, whereas they are almost always involved in cancerous ulcers of any duration. The effect of antisiphilitic treatment may clear up the diagnosis, but on the other hand, it may lead to a waste of valuable time; it should therefore be employed only in quite early cases. A microscopic examination of a scraping from the surface of the ulcer may afford valuable information.

The diagnosis between tubercle and cancer is often a matter of great difficulty. The same situation is common to both, both may have their origin in an injury, and in both there may be lymphatic enlargement. In typical cases the absence of decided induration, the sodden condition of the adjacent portions of the tongue, the pink color of the surface of the ulcer, the presence of caseous material, and the small yellow tubercles in the surrounding mucous membrane serve to distinguish a tubercular ulcer. Tuberculous ulcers often appear in subjects who are too young for cancer and in whom there are other signs of tuberculosis. The differential diagnosis between these two conditions is not a matter of very great importance, as the treatment is the same in both, viz., excision.

In distinguishing between a simple and a cancerous wart, most reliance must be placed upon the presence or absence of fixation, induration and ulceration, and it must be borne in mind that a simple

wart may become cancerous. The examination of a scraping from a warty growth is of no value unless the surface is ulcerated.

The diagnosis between a simple ulcer and a cancerous ulcer has already been discussed.

The *treatment* of cancer of the tongue comprises the treatment of pre-cancerous conditions as well as that of the fully developed disease; indeed the former is much more important than the latter, for although cancer can nearly always be prevented by timely and judicious treatment of innocent sores, it is but rarely that the fully developed disease can be permanently cured. All indolent ulcers and warty growths in persons over thirty must be dealt with by remedies most likely to effect a cure, and they must be most carefully guarded from every source of irritation. Rough or carious teeth and badly fitting dentures must be efficiently treated by the dentist. Smoking, tobacco-chewing, strong wine and spirits must be given up, the food must be neither very hot nor very cold, neither very sour nor very sweet, and not highly spiced. All applications to the sore place must be unirritating, and caustics must be religiously avoided. If under careful treatment an indolent sore or wart does not show marked signs of improvement in a fortnight or three weeks, it should be cut out. The operation is a trivial one, as it is only necessary to remove the disease and a small surrounding area of healthy tissue. In many cases it may prove the means of saving the patient from the horrors of death from lingual cancer.

The operative treatment of actual cancer of the tongue is not attended with good results, and this is chiefly due to the operation being so often postponed until the disease has become so extensive that it cannot be thoroughly removed. It is estimated that only about 10 per cent of patients operated on for cancer are permanently cured, and that in cases in which a cure is not effected the duration of life is increased six or eight months. It should, however, be added that even though death is the ultimate result, the sufferings of the patient are much less when brought about by a recurrence of the disease in the glands of the neck, than when due to a continuance of the growth in the mouth. The mortality directly due to the operation is rather over 10 per cent.

As a general rule, unless the disease can be very fully and freely extirpated, it is better not to operate, for the tendency to recurrence *in situ* is very great. When the disease has extended to the floor

of the mouth, the mandible, the arches of the palate, the tonsil, or has largely infiltrated the glands of the neck, the advisability of operating is doubtful. In determining the question much will depend upon the general condition of the patient,

The tongue may be removed either wholly or in part by the following methods:

(1) From within the mouth, without external incision, (*a*) by ecraseur (Morrant Baker), (*b*) by scissors (Whitehead). (2) From within the mouth, the cheek being divided on the same side as the disease (Furieux Jordan). (3) Through the mylo-hyoid space (Regnoli). (4) By division of lower lip and jaw (Syme). (5) Through submaxillary region (Kocher).

For the details of these operations, and the various conditions for which they are suited, consult a work on Operative Surgery.

Popular Science News for August, 1896.

"CARE OF THE TEETH," by F. H. Funston, M. D., New York City. No meal should ever be partaken of without immediately thereafter rinsing and washing the mouth with clean, clear water, if nothing else, and obviously the addition of some pleasant antiseptic, like Euthymol is preferable. So, too, this act should be succeeded by a thorough scrubbing of the teeth with a moderately stiff brush, passed both laterally and perpendicularly over front and back surfaces alike; not even the most microscopic quantity of food should be allowed to remain in the interstices of the teeth or about the gums. Such a measure, if carefully carried out with the aid of a strictly antiseptic dentifrice, will prove not only a means of warding off offensive breath and the many maladies common to the gums and teeth, but will speedily eradicate tartar and retracted gums.

During the last half-century dentifrices have multiplied by thousands, each presenting its own peculiar claim. Some are really valuable; others are harmless; not a few are dangerous. In the latter connection too great stress cannot be laid upon the fact that any article intended to be utilized for the toilet of the teeth and which presents an acid or markedly alkaline reaction, is to be regarded with suspicion; it may be added that a number in the market are neither more nor less than dilute solutions of spirit of salt (muriatic acid), which is most rapid in its action upon enamel.

and moreover promotes decay and tends to produce offensive exhalations. Others are little more than pleasantly flavored soap; but if the latter ingredient is good and pure it cannot be considered objectionable. Tooth powders, too, which sometimes accompany fluid dentifrices, must also be looked upon with suspicion, as they not infrequently contain ingredients that may prove detrimental. And it may here be remarked that those applications for the teeth which are warranted to immediately whiten are always dangerous, inasmuch as they rely upon strong chemicals for their action.

A recent improvement in this line is manufactured by Parke, Davis & Co., Detroit, whose reputation as purveyors only of legitimate products for the medical, pharmaceutical and dental professions is sufficient guarantee that it, at least, presents none of the objectionable qualities that are too often found in preparations of this kind. This is Euthymol tooth paste, which, as its name indicates, depends in large measure for its value upon euthymol, a preparation that has long been employed by surgeons wherever perfect antiseptis was desired, and has moreover deservedly gained universal popularity because of its freedom from danger except to germ life.

To the mind of the writer this preparation warrants specific mention, inasmuch as it offers the ideal of a dentifrice in that it is at the same time a powerful antiseptic, reasonably detergent, modest in price, pleasant in odor and exceptionally grateful to mouth and gums, while last, but not least, its use affords a positive protection against foul breath and other conditions peculiar to the mouth that lead to retraction and softening of the gums, staining of enamel, formation of tartar and decay; it is likewise a reasonably certain guarantee against a number of diseases which gain entrance to the human organism through germs in the mouth and digestive organs.

The Ohio Dental Journal for August, 1896.

"SYSTEMIC REMEDIES," by H. L. Ambler, D.D.S., M.D., Cleveland. The purpose of this paper is to suggest a few of the systemic remedies for relieving functional nervous troubles in patients who present themselves for dental operations, so that reflex irritation of the whole nervous system may be reduced to a minimum or entirely obliterated. No doubt much can be accomplished in this direction, and we suggest that others continue the work so that at

some future time they may give us further data, accompanied with names of drugs, formulæ and method of exhibition, especially in phagadenic pericementitis.

The sense of hearing is always noted by the patient, as affected by the use in the mouth of sandpaper disks, carborundum strips, files and all forms of cutting instruments which are used in the engine. Perhaps the one which makes the most noise is a large coarse corundum wheel. Much of mechanical irritation and vibration can be eliminated by discarding the cable and using any cord engine. To have the nerves toned up to a healthy condition, so that these noises and unpleasant sensations will be tolerated, or for the time being to partially obtund their sensibility by administering systemic remedies, is a desirable consideration. Proceeding on this plan, if a patient has neurosis from gastric trouble he should be cured or relieved by proper remedies, possibly by administering Phillips' milk of magnesia, zymocide, nux vomica, etc., before proceeding to operate. The length of time for their exhibition would be varied according to the case.

In neurasthenia from any cause, perhaps we have the most difficult cases to operate upon. Patients in this condition do not wish to be touched because they are so irritable, much less do they want sensitive teeth excavated. No doubt this condition keeps some patients away from our offices. Here the nerves need nutrition, which is obtained through the blood; thus it must be supplied with proper food, so that it in turn may build up the nerve cells. If the remedy is supplied in form of drugs, iron, quinine and the phosphates would be advisable.

The reflex irritation from the brain, produced by fear, has been overcome in nearly every case by hypnotic suggestion, as demonstrated by Dr. Sudduth and others. Perhaps this method will not come into general dental use, but to those skilled in its application it is a success. It has been employed for years in general hospitals abroad for minor surgical operations, rheumatism, hysteria, chorea, etc. Once in a great while a young, timid patient when occupying the chair for the first time will faint, caused by dread of what they think will surely happen in the form of pain; and occasionally patients will faint habitually when they go to the dentist, whether they are hurt or not. Both local and constitutional influences affect the teeth, and we can often correct local causes by systemic treat-

ment. Nervousness, accompanied with pain, arising from a low vital or unoxigenized condition of the blood, is often relieved by inhaling nitrous oxid. Patients who are anemic and more or less prostrated nervously, would certainly dread to visit the dentist, and before doing so should guard against fatigue, over-excitement, loss of sleep, too much coffee, or going too long without proper food. In health the nervous system is neither excited nor depressed; it works in harmony with its requirements, but if you apply irritation, as for example, cutting in sensitive dentine, then this harmony is destroyed, and the amount and extent of irritation is in proportion to the amount and extent of derangement caused by the cutting. Bichat says that life rests upon the tripod of innervation, respiration and circulation; and whatever affects one of these legs affects the whole body. This statement can be fully appreciated by a very large number of persons who can testify that excavating sensitive dentine causes direct irritation and greatly affects the leg of the tripod called innervation, thus irritating the system at large; the patient becomes restless, shrinks, jumps, holds his breath, with increased flow of saliva, headache, nausea, muscular spasm; desire to urinate. The nervous system has a mode of action of its own, and this action is susceptible of exaltation, depression or deprivation. The brain, spinal cord and every nerve periphery require a certain amount of and a certain character of blood for their proper nutrition. Too much and too nutritious, then we have over-stimulation; too little blood and too poor, then we have derangement from lack of pressure and nutrition.

Nervine for general nervous disturbances, tincture valerian and gentian, equal parts, in teaspoonful or tablespoonful doses, according to indications.

When necessary to keep up a continuous impression, use ten grains bromide potassium dissolved in a wine-glass of water; administer this amount from two to four times per day.

For lassitude and anemia, use Dr. Weld's non-alcoholic tincture of iron, or tincture iron one ounce, sulphate of quinine one dram; administer fifteen drops of this combination three times per day.

"GOLD FILLING—CONSIDERATION OF MINOR DETAILS," by P. G. Wood, D.D.S., Corry, Pa. Read at Lake Erie Dental Society, Cambridge, Pa., May, 1896. In considering the subject

which has been assigned me it seems wise to leave its more weighty phases for discussion by those master minds who have new and original ideas to present, and I shall, therefore, content myself with simply calling your attention to some of the minor details; little things which, when slighted, are the cause of many an imperfect gold filling. It is axiomatic that the perfection of any operation is largely due to the careful attention given to details, and gold filling is not an exception to the rule.

Taking a proximal cavity in a superior incisor as a typical one for consideration, the first point to claim our attention is to see that the teeth are thoroughly polished and cleansed of all debris that may have collected between them or around the gingival borders. Now, it is a well known fact that a tooth is less sensitive when thoroughly desiccated, so it is better to adjust the dam before any excavating has been done, and in placing it in position let it embrace a large enough number of the adjacent teeth so that it will neither obstruct the light nor be in the operator's way during the remainder of the operation. A doily placed underneath the dam to keep it from the patient's face, will not only be duly appreciated by the patient, but will also tend to the successful completion of the filling, for anything that places the patient more at ease aids the operator. Further desiccation of the tooth by the use of warm air will lessen the sensitiveness, and also aid us in detecting all unsound tooth-structure. Now gain free access to the cavity, so that all parts can be plainly seen either by direct or reflected light, preferably of course from the palatine side; but it is far better, if necessary, to sacrifice some of the labial wall at the expense of the gold showing than it is to court failure by working in the dark. And I would urge the desirability of having the teeth slightly separated, if naturally very close or crowded. A few fibers of cotton packed between the teeth at the time the examination is made, should it be a few days prior to the operation, will greatly simplify it for all concerned; then when the teeth return to their normal position we will have the natural lateral contact, so much to be desired.

In shaping the cavity avoid all sharp angles in the margin, or deep pits within. Let graceful curves abound, and make sure that the margin of the cavity will be free, so as to be not only easily kept clean, but as nearly self-cleansing as possible when the teeth return to their natural position. A great mistake is often made,

and subsequent failure invited, by leaving the palatine wall intact to build the gold against. Better cut it away and replace with gold than leave it to be broken out by the occlusion of the lower teeth in mastication.

Finally, before packing the gold, carefully polish the margin of the cavity with a medium fine strip, for a much closer adaptation of gold can be made to a smooth surface than to a rough one. In packing the gold let small pieces and small instruments be the rule, filling the most inaccessible portions of the cavity first, always keeping the filling, as it progresses, as nearly level as possible.

It is unnecessary to speak of properly contouring the gold, but it will not be amiss to caution against ruining a nicely contoured filling by using too large disks or wheels, and too wide strips in finishing. After the gold is packed burnish thoroughly from the middle toward the edges of the filling and repeat often during the use of strips or disks. Many a filling might be improved if this were thoroughly done.

And having ascertained from the dental supply agents that a very large proportion of the disks used by a majority of operators were of the larger varieties—above one-half inch in diameter—I would emphasize the statement by repeating that the large disks and wide strips are to blame for the *flat* condition of many of the fillings we see, which should be nicely contoured. And I conclude with the assertion that the greatest cause of all the imperfections in our gold fillings is not the operator's lack of ability to do better work, but it is due to carelessness in the minor details of the operation.

International Dental Journal for August, 1896.

"A SYSTEM OF DETACHABLE FACINGS," by W. L. Mason, D.D.S., Red Bank, N. J. Read before the Academy of Stomatology, Philadelphia, April 28, 1896. I present to you to-night, for your consideration, a system of detachable facings for crown and bridge work—a system that does not in any way change the appearance of the perfectly made crown or bridge of to-day.

About sixteen years ago porcelain facings, soldered to gold bands, were put in general use and closely after came the bridge work, very crude at that time, but advancing rapidly to the almost perfect construction of to-day. I could say perfect but for one fault, and that is the uncertainty of the condition of the porcelains after

soldering and cementing into position. I know that we have teeth to-day that stand the strain better in the process of forming them into crowns or into bridges, but they will never be made to expand or contract like metal. We may be very careful in heating an invested piece for soldering, and cool off properly, and try the piece in, and have no strain upon it, so we cement in position. As near as we can see we have a perfect piece of bridge work. But just as long as the piece is in service the porcelains are apt to separate from their backings. I think it is a great necessity that we attend to the future conditions which are apt to happen with a porcelain on crown or bridge. There is constant possibility of having a patient back with a porcelain broken off, and we should so construct our work as to replace damage quickly, not only to the patient's comfort, but also to our own.

I will acknowledge that I have never yet repaired a bridge in the mouth to my own satisfaction where the porcelain was soldered to its backing. Is it practical to have a porcelain detachable? It must be, for scores have tried to produce them. Patent records show the efforts made. Up to the present time none has been invented so that it can be manufactured and sold to the dentist for his immediate use, and whether it is practical or not, I would leave for you to examine the mode of forming and judge for yourselves.

In my judgment a detachable porcelain is just as important to crown and bridge work as crown and bridge work is to dentistry. For a number of years I have been seeking a mode of constructing the porcelains so that they would be separate, but have a perfect contact with the backings and be equal to the facings now in use. Through that effort I have produced a system of dovetail and grooves to match, and a process of manufacturing whereby a porcelain is made independent of its backing, and a porcelain from one mold will fit each and every one of the backings made for that size mold, or universal in their use.

Before going further I will call your attention to a few illustrations of the process. Fig. 1 shows a lower canine crowned and cemented to its root. Fig. 2 shows its porcelain sliding from its backing. Fig. 3 shows porcelain and backing separate. This illustrates the mode of constructing the anterior upper and lower six teeth. In Fig. 3 we have a metal dovetail fitted perfectly to the

back of the porcelain and extending a little beyond its cutting-point; it also shows its solid backing with a groove to receive the dovetail. It will not be necessary to go into the detail of the construction of the parts, but only that part of the work that is left for you to finish, as the porcelains with the metal dovetail attached and the grooved backing are manufactured. The tooth with its backing is fitted to the band by grinding out where necessary. Then wax the gold backing to band, and after wax is hard take hold of extended portion of dovetail and draw from backing. The crown is now ready to invest. Be careful to fill up the dovetail groove and let investment material come over cutting-point of backing so as to keep out all solder.

Heat up solder and cool as quickly as you like. After removing from investment see that the groove is thoroughly cleaned and dried; also dovetail on porcelain. Now take some chloro-percha, quite thick, fill up groove, and force porcelain in position. Saw off (don't cut) the extended portion of metal dovetail. Then finish as usual. For use as a dummy, articulate to position and join parts with wax. The condition for the posterior teeth I have changed somewhat. Fig. 4 shows a molar dummy, with its cusp and porcelain together, having the same general appearance of molar dummy in general use, with the exception that the porcelain takes up more space on its palatal portion, making a saving of gold.

Fig. 5 shows the dummy parted, giving a view of the joining parts of a solid gold cusp, the upper buccal portion sloping upward and backward toward the ridge, and having on its face a square pin extending forward and upward. Fig. 5 also shows porcelain with square hole extending from surface just above the cusp portion, upward and outward to receive square pin fitted to cusp. After placing cusp and porcelain together the dummy is ready to grind in position. Wax parts together, remove porcelain, and solder. Cement porcelain to pin and finish as usual. The advantages gained by this method are many, and can be appreciated only by practice.

The first advantage will be that you do not have to place your teeth under the flame of a blow-pipe. *Second.* You have a solid backing without bubbles, as all parts are dropped forged. *Third.* You can heat up your invested piece quickly, and not have to take the usual care; also cool off quickly. *Fourth.* The small amount of solder you have to use—just enough to join parts together. *Fifth.*

Saving your porcelain from being etched by borax. *Sixth.* You are able to fit a bridge, releasing the strain by cutting and resoldering, and not have the porcelain interfered with. *Seventh.* The most important of all. The amount of time saved to the busy dentist will equal about half of the time spent in the old method, besides being free from annoyance in spending part or whole of a day repairing a bridge; with this system the repair is but a matter of a few minutes. If you put a tooth of mold No. 22 on, and it should break, you may order an exact duplicate of same and slip it in position, keeping yourself in good humor, and giving your patient the greatest amount of satisfaction.

The Dental Review for August, 1896.

"REFLEX FACIAL NEURALGIA," by T. H. Morrison, M. D., D.D.S., St. Louis, Mo. After reading and hearing articles without number often repeated, on subjects I consider worn out, such as filling roots, etc., etc., it has occurred to me that very *little* attention has been given to facial reflex action.

Several cases of apparently idiopathic neuralgia came my way as a last resort, after long continued treatment by the physician or neurologist. I did nothing at all mysterious, simply removed the exciting causes, all done in a very short time and followed in nearly every instance by absolute and permanent relief. How much better if some one of our calling had been consulted and examined the oral cavity and contents, instead of the physician asking "Are your teeth all right?" and then proceeding with his big prescriptions, many of them doing more harm than good, by the way. Physicians treat symptoms as a rule, but (as a learned judge of Missouri terms us) "tooth carpenters" spend their time in hunting for and removing causes of pain and disease.

In a genuine case of reflex neuralgia one might prescribe quinine, iron and arsenic in their various forms forever to no avail. Medical books say in regard to the etiology of neuralgia that malaria, gout and anemia are responsible, and little more than mention reflex action and decayed teeth.

I know there are some neuralgias (called idiopathic), but many, especially of the second and third branches of the trigeminus, are reflected pain from the teeth, some from growth and diseased bone, growth in the nasal cavity and middle ear, and eye-strain. How-

ever, the teeth are accountable for over one-half of all severe reflex neuralgia, in my opinion.

Webster says, "Neuralgia is a disease, the chief symptom of which is a very acute pain, exacerbating or intermittent, which follows the course of a nervous branch and its ramifications and seems therefore to be seated in the nerve." That last was well put and protects Webster nicely for all time, for we know that things are not always what they seem. Abnormalities in the condition, number and eruption of the teeth do cause pain elsewhere, and chiefly along the branches of the fifth pair of cranial nerves and their ganglionic connections.

We see fewer cases of neuralgia than we should, because the medical practitioner does not know that the most acute intermitting facial neuralgia is often caused by the formation of a pulp-stone or nodule inside the pulp-chamber of a tooth; also that neuralgia is the subjective symptom of a growth of pericementosis or exostosis. They know about growths of bone and swellings causing pressure and exciting inflammation along the whole nerve-sheath, but what do they know about these delicate and difficult subjects for diagnosis in relation to the teeth?

I tell you, dentists could teach them a thing or two, and save suffering humanity from shotgun prescriptions and the too free use of somniferous drugs, as well as surgical operations, such as neurotomy, neurotomy, etc. I mean by this only that such things are done too hastily and without proper consideration. When I do not know the cause of anything, I do not take it for granted that no one else does, but am perfectly willing to have any one's opinion, and always seek it when in doubt. Shall I speak from observation, recalling several cases, one treated by a celebrated neurologist for over a year, and which by chance came to my hands? There was not a cavity of which either the patient or the physician knew, in fact the enamel walls had not broken down. I did about fifty dollars worth of work in nothing but amalgam fillings, so you can imagine how many billions of nerve endings were irritated. The case was cured permanently.

Another was operated upon by an equally renowned surgeon, and the superior dental nerve removed entirely; neuralgia still prevailed in as bad, if not more terrible form. After many months one lone upper molar, which had roots each twice the normal size, was

extracted in our office. This being an extensive and aggravated case of pericementosis. Patient has not been so free from facial neuralgia for years.

To sum up, any irritation of the millions of nerve fibrillæ in the teeth and exposed necks of teeth is amply sufficient to start an inflammation (if it be inflammation, as I think it is) extending along the course of the nerves to the larger trunks, where the blood vessels of the nerve sheaths are proportionately large, and may also extend through the ganglion to the sympathetic system.

This paper could be continued indefinitely, with its minutiae, but I merely wish to start the ball rolling on this very important though much neglected subject, of which we see little or no writing in the dental journals, and which is the weak point in the education of our medical brothers.

Since this paper was written I hear there was an article or two on neuralgia recently in the dental journals.

The Dental Cosmos for August, 1896.

"SURGERY OF THE MAXILLARY SINUS," by Dr. J. D. Patterson, Kansas City. Read before the Interstate Dental Meeting at Excelsior Springs, Mo., June 23-26, 1896. On account of contiguity of the sinus to the superior molar roots, disease of these latter often extends to the antrum. Diseases of these teeth are too often treated without investigating the antrum, especially in obstinate and chronic cases. The treatment of diseases of this cavity has not been properly taught, so that the ordinary practitioner is not at all skilled in their diagnosis. The utmost skill is often demanded in making a correct diagnosis. The symptoms are often obscure and deceptive. When from a diseased tooth the diagnosis is often simple, but from other causes is more obscure. When the teeth are not affected the symptoms are often similar to, and are often mistaken for, a severe coryza. The teeth do not respond and there is no redness or swelling. The most ordinary and evident signs are not present. Sometimes an electric lamp in the mouth will show through the antrum and cheek, but even the translucency cannot be depended upon. The new X rays may prove valuable in diagnosing diseases of this kind. When the usual symptoms are present—heat, swelling, distention, etc.—and are plain, there is sufficient ground for operating. The diseased tooth should be ex-

tracted, and this alone will often effect a cure. When chronic, however, this will not be sufficient. The antrum must then be opened, and there has been much dispute as to the proper place for performing this operation. I have found that the best place generally is the lowest level of the space formed by the triangle of the three roots of the upper first molar. First sterilize your instruments in resorcin or cassia water. All instruments and surroundings must be aseptic. The engine makes such work much easier and more rapid nowadays. The trephine shown should be first used, with little pressure, as it will progress rapidly. When the cavity is reached a flow of diseased matter will come. After this is well evacuated follow with the larger instruments until you can insert the little finger and explore all parts of the cavity and see as much of it as possible. Wash with antiseptic liquids and dress as may be necessary, with water at 100°, with a pinch of salt to allay pain, which it will do. Tumors and growths must be removed with curets. These are difficult to treat, but can be removed successfully and a cure effected (as described in a case given). It may be safely said that even malignant growths may be removed and a cure effected if taken soon enough. Complete bony walls isolate the growth, and a perfect cure can be attained by their removal if taken before the bone has become affected.

“A SO-CALLED ABNORMAL FORM OF THE JAW,” by Mr. Wilson, Lexington, Mo. Read before the same meeting. This is the form where the jaw protrudes so that the lower incisors close over on the outside of the upper teeth. In “Old Virginia” this is called “jimble-jaw.” Jimble, being a folklore word, is not found in the dictionaries. The tribes east of the Baltic sea were called “Sterling.” Those of the west were the Scandinavian stocks. The *Esterlings* emigrated from the Baltic to England and Wales. There were two main stocks of people in Europe—the Cimbrians of the north, who were a light, tall race; and in the south the short, dark people. The Cimbrians, or *Kimberlings*, of the north had the protruding jaw. It was an essential feature of the Kimberlings, and the antique skulls of the north often show it. The Kimberlings were a fierce and warlike people, and the jaw was closed with the determination of an energetic and aggressive character. They had an elongated face, and helmets are found made to fit such a face and the protrusive jaw.

They were jimble-jawed men. This form of jaw has also much to do with the origin of certain sounds in our language, as it led to the protrusion of the tongue beyond the upper incisors in speaking some words. The Romans depicted these people with protruding tongues in derision. The protruding jaw came from the early eating of horse flesh and other tough kinds of food. The horse was then used for food only, and this employment of horse flesh survives to-day only in France and Belgium. This form of jaw decreased on account of softer food due to cooking and other effects of civilization. The intermarriage of the two kinds of people produced a mixed stock in America. The jimble-jaw is more common in the southern United States than in the north, where the folklore is never heard. But in the south the jimber or kimber-jaw is common.

THE USE OF ROENTGEN RAYS.—The man Montague who swallowed his denture while in prison at Dundee, has at last got rid of his unwelcome intruder. His stomach was photographed by Roentgen light on an 18 by 14 inch plate, with an exposure of one and a half hours. A faint negative was the result, showing something like a set of teeth above the stomach. It was blurred and in duplicate, but this was supposed to be due to the man's motion in breathing, and also to the plate having shifted its position. A careful examination of the stomach was performed with no result, but the plate was afterwards found in the intestine and released. We wonder if the faint image on the negative was that of the teeth, or whether the dentine had again changed its position, as the operation was performed twenty-four hours after the photograph was taken. In the case of a vulcanite denture only the teeth and clasps would cast a shadow, the plate being transparent to the rays.—*Brit. Jour. Dent. Sc.*

DEATH THREE DAYS AFTER CHLOROFORM ADMINISTRATION.—The report of a case reaches us from Germany of a patient who died from the effects of chloroform used as an anesthetic for the removal of fourteen stumps. About seventy cubic centimeters were administered, and the patient vomited many times after the anesthesia. On the next day the vomiting persisted and there was slight jaundice. The pulse began to be accelerated, and on the following day the urine contained albumen. On the next day the patient became restless, and the pulse rapidly increased in frequency. The pupils were widely dilated. On the third day death supervened. At the necropsy there was recent fatty degeneration of the heart, liver and both kidneys. This, of course, was a case in which chloroform should on no account have been employed; in fact, we heartily condemn its use in dental practice altogether. The fatality differs from the ordinary run inasmuch as the chloroform narcosis was not immediately fatal.—*Brit. Jour. Dent. Sc.*

Letters.

ANSWER TO DR. BAILEY.

LE MARS, Iowa, September 25, 1896.

To the Editor of the Digest,

MR. EDITOR:—In the August DIGEST Dr. Bailey, of Wisconsin, relates his experience with sodium peroxid and asks what the trouble is. My advice to Dr. Bailey would be this: Be careful not to get the peroxid through the end of the root and then you will have no further trouble.

Yours,

E. D. BROWER.

NEW YORK LETTER.

NEW YORK, September 26, 1896.

To the Editor of the Digest,

MR. EDITOR:—This clipping is from a New York paper:

“Used Chloroform and Gas.—Charles S. Ives, a dentist, 70 years old, committed suicide at his home, No. 62 West Thirty-fifth street, yesterday morning. His business is said to have been good and the only reason that can be assigned for his act is that he was suffering from insomnia.” It is a sad thing to chronicle the tragic termination of a life so familiar among dentists for the last thirty-five years as was Dr. Ives’.

Magazines and newspapers are keeping abreast of the times, and dental journals must follow suit if they expect the thousands of dentists who do not belong to societies to read them. There are reasons why our gatherings are losing their attractiveness, and smart will be the body of men that devises a remedy. Old lines are not going to satisfy.

The New Jersey Central opened the season at Newark with these questions: Whose amalgam do you consider the best? And do you squeeze the amalgam before placing in the cavity? It will be interesting to see the answers, for the questions are important. For a long time we believed the harder the squeeze the better, but we have gone directly the other way during the last two years and are better

satisfied. Another thing we have learned is, that perfect amalgamation of the mass is a very important item. Amalgams are coming more and more into use by the better class of practitioners, and this argues for a better kind of practice.

Dr. Cravens is out in the August DIGEST on a change of treatment for Riggs' disease from "hot water." That was a "sure cure," so why change to diluted sulphuric acid? We don't use anything in the pockets and we get all the results that are being claimed except this—we do not claim that like conditions will not again bring diseased action. Dr. Cravens says this disease is not hereditary, but is dependent upon a weakened condition of the surrounding tissues, just as other diseases are upon weak lungs. Yes, but how are the lungs, etc., weakened? Are they not an heritage?

This is what we have claimed for a long time—that because of these tendencies to weakness the transmutation is made possible. We do not see any way of getting behind the truth of this reasoning. Men who claim that they always get "absolute cures" are simply mouthing it. There is nothing scientific in such claims, even with lactic acid. Let it be said that these tendencies are what permit disease; we all have them in a greater or less degree.

Dr. Rhein, in his paper and record of cases before the Odontological Society, proves these views in relation to tendencies or weakness. Just in proportion to these weakened conditions of tissues, either by pressure unduly applied or by uncleanly associations, the process of inflammation will be accelerated. Also, by the changing of these there will be a proportionate return to health. This is termed an arrest of the inflammatory process.

If there be other weakened conditions of tissues, which lead to the local disturbance of the tissues about the teeth, then we advocate the need of constitutional aids to fortify them. We must recognize that there may be combined conditions of weakness that make manifest the more aggravated local expressions of disorder. A broad view must be taken of this prevalent disorder, with its multitude of phases, so that we can arrive at intelligent conclusions.

We notice that "we can demonstrate that nitrate of silver does penetrate the tissues of the teeth." Professor Harlan says not.

We also notice, in the September *Review*, that "*The Odontographic Journal* very much resembles the *International Dental Journal* nowadays, especially the color of the cover, type, etc. It is sprightlier

and has more science in it than its neighbor." But we do not see the significance or reason of these remarks.

November is to be an important month, but which way things are going no one seems wise enough to know. Many do not care, so long as business improves.

Cordially,

NEW YORK.

INCORPORATION OF ASSOCIATION OF DENTAL EXAMINERS.

WASHINGTON, D. C., September 27, 1896.

Editor of the Dental Digest,

DEAR DOCTOR:—I send you a clipping from one of our daily papers, the *Evening Star*, of September 12, 1896, which briefly tells of a matter which is of some interest to the profession:

"The National Association of Dental Examiners was incorporated here to-day by articles filed by Henry B. Noble, Williams Donnelly and Mark F. Finley. The purpose and object of the association are stated to be the securing, through the operation of the dental examining boards of the states, a high and uniform standard of qualification for dental practitioners, and uniformity of method in the conduct, operation and workings of said boards, and uniformity in the legislation of the several states creating the same or governing their conduct and operation. The association is to consist of the one here and such other boards of the several states and District of Columbia as may elect to join it and subscribe to the constitution and by-laws hereafter to be adopted by it."

This action was taken by direction of the National Association of Dental Examiners at its recent meeting at Saratoga.

Very truly,

M. F. FINLEY.

DEATH FROM DRINKING CHLOROFORM.—An inquest was held in the Meath Hospital last week on the body of a woman aged 30. It appeared from the evidence that deceased had taken half an ounce of chloroform to relieve neuralgia. She seems to have had no difficulty in obtaining the drug, which was supplied from the chemist without any precautions. Both the coroner and the jury expressed an opinion that the sale of chloroform promiscuously, without a doctor's order, is dangerous and ought to be discouraged. And there, we suppose, the matter will remain.—*Brit. Jour. Dent. Sc.*

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

REPORT OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

We publish this month a part of the report of the National Association of Dental Examiners at the recent meeting at Saratoga. We think this report will be read and studied with interest by every dentist having the interests of his profession at heart. This association is the great governing body of the dental profession, and it possesses the authority and power to say what standard the dentists and the colleges shall live up to. We will discuss its workings fully when the publishing of the report is completed.

THE DENTAL COLLEGES AND THE FACULTIES' ASSOCIATION.

In this issue will be found a report of the College Faculties' Association. From this report we learn that the requirements for entrance after this year will be increased and a better general education required.

It must be a source of gratification to the profession generally to know that a more diversified education will hereafter characterize the graduates, as it is sure to make an improvement in the character of the profession as to culture, and more especially since it will bring into the profession those who have learned to think. There are too many in the world to-day who have gone through life without thinking of what they are doing and have done, and the habit of thinking is a requirement for a good dentist as much as for any other occupation.

From this report we also learn that there are fifty-three colleges in the United States, not all of which are in the association, but

those outside have made application for admission. No doubt it is best that all reputable colleges should be in the association with some agreed upon regulations.

We predict that before the profession grows much older requirements will be insisted upon that will include natural qualifications, which practitioners of dentistry must have to make a great success. We mean by this the mechanical tendency or qualification, without which education cannot make a successful practitioner.

We should think that the size of the classes would be smaller, as colleges are now organized in the different parts of the country, but the great good will come from getting better prepared practitioners. This question of better qualifications is not new and is being agitated all the time.

We see that a new feature is proposed—that of academic gowns and caps for Commencement day. Also the selecting of a color. We see that the committee reports favorably on lilac. Now lilac is a very beautiful color, but would it not be more appropriate to “paint it red”?

On the whole we wish to congratulate the College Faculties' Association for being so well organized and for doing such good work. We can scarcely imagine what the educational system of the dental profession would be if it were not for the National Association of Dental Faculties as a controller.

Notices.

A NEW SOCIETY.

On July 11, 1896, a new dental society was formally organized in Washington, D. C., to be called the “Odontological Society,” the membership in which is confined exclusively to the faculty and graduates of the Dental Department of the National University.

AMERICAN DENTAL ASSOCIATION.

The following officers were elected at the recent meeting of the American Dental Association at Saratoga, N. Y.: President, James Truman, of Philadelphia; First Vice-President, Thomas Fillebrown, of Boston; Second Vice-President, W. R. Clifton, of Waco, Tex.; Recording Secretary, George H. Cushing, of Chicago; Corresponding Secretary, Emma Eames Chase, of

St. Louis, Mo.; Treasurer, Henry W. Morgan, of Nashville; Executive Committee, S. G. Perry, of New York; W. W. Walker, of New York, and A. O. Hunt, of Chicago.

The next meeting will be held at Old Point Comfort, Va., immediately after the meeting of the Southern Dental Association.

NATIONAL SCHOOL OF DENTAL TECHNICS.

The following officers were elected for 1896-7: President, Henry W. Morgan, of Nashville, Tenn.; Vice-President, S. H. Guilford, of Philadelphia; Secretary and Treasurer, J. F. Stephan, of Cleveland; Executive Committee, D. M. Cattell, N. S. Hoff and George H. Wilson.

PROCEEDINGS OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS,

INCORPORATED AT WASHINGTON, D. C., SEPTEMBER 10, 1896.

The thirteenth annual session of the National Association of Dental Examiners was called to order at 10:30 a. m., Monday, August 3, 1896, at Saratoga Springs, N. Y., President J. T. Abbott presiding, Williams Donnally, secretary pro tem.

On the roll-call of states the following were represented:

Alabama.....	T. P. Whitby	Selma
	J. A. Hall.....	Collinsville
District of Columbia.....	H. B. Noble.....	Washington
	Williams Donnally.....	"
	M. F. Finley.....	"
Nebraska.....	G. S. Nason	Omaha
Iowa.....	J. T. Abbott.....	Manchester
Virginia.....	J. Hall Moore.....	Richmond
Georgia	A. G. Bouton.....	Savannah

On second roll-call of states by the secretary the following responded:

Alabama.....	T. P. Whitby	Selma
	J. A. Hall	Collinsville
Arkansas	No response.	
California	No response.	
Colorado	No response.	
Connecticut.....	George L. Parmele.....	Hartford
Delaware.....	No response.	
District of Columbia.....	M. F. Finley.....	Washington
	Williams Donnally.....	"
	H. B. Noble.....	"
Florida.....	No response.	

Georgia	A. G. Bouton.....	Savannah
Illinois.....	A. W. Harlan.....	Chicago
Iowa	J. T. Abbott	Manchester
Kansas.....	No response.	
Kentucky	No response.	
Maine.....	No response.	
Maryland.....	No response.	
Massachusetts	No response.	
Mississippi	No response.	
Michigan	No response.	
Nebraska.....	George S. Nason.....	Omaha
New Hampshire.....	No response.	
New Jersey.....	F. C. Barlow.....	Jersey City
	G. Carleton Brown.....	Elizabeth
	George E. Adams.....	South Orange
	Charles A. Meeker	Newark
New York.....	No response.	
North Dakota.....	No response.	
North Carolina.....	No response.	
South Carolina.....	No response.	
Ohio.....	F. H. Lyder	Akron
Oklahoma.....	No response.	
Pennsylvania	No response.	
Rhode Island.....	C. A. Brackett.....	Newport
Tennessee	No response.	
Virginia.....	J. Hall Moore.....	Richmond
Vermont	No response.	
West Virginia.....	No response.	
Wisconsin....	Charles C. Chittenden	Madison

On motion the reading of the minutes of 1895 was suspended, they being already published and distributed.

The secretary presented the reports of the secretaries of the different state examining boards, as per resolution of August 7, 1895, presented by Dr. Barlow.

The reports were received, and on motion a committee of two was appointed by the chair to tabulate the same and report to the association.

The president appointed C. A. Brackett, Newport, R. I., H. B. Noble, Washington, D. C.

Howard University, of Washington, D. C., made application for recognition to the association; referred to the committee on colleges.

Nebraska board made application for membership, with fee of \$5.00 accompanying.

The treasurer's report was read, as follows:

Cash receipts.....	\$110.00
Cash expenditures.....	65.81
Cash balance.....	<u>\$ 44.19</u>

State boards owing the annual dues for Proceedings of '95:

California,	Mississippi,	Vermont,
Colorado,	North Dakota,	West Virginia.
Michigan,	Oklahoma,	

T. P. Whitby and G. S. Nason were appointed a committee to audit the accounts, and reported the same as correct.

Secretary requested a resolution to procure a copy of Polk's 1896 Dental Directory of the United States. Passed.

Secretary requested resolution for appointment of a committee on the death of the late Dr. W. E. Magill.

Drs. A. W. Harlan and L. Ashley Faught were appointed by the president.

The president read some brief remarks, with suggestions, as follows:

Gentlemen of The National Dental Association:

Again we are permitted by a kind Providence to meet in annual session as a deliberative body to discuss questions of importance to ourselves, to state boards, dental colleges, practitioners of dentistry, and patrons. I believe we have not as yet fully comprehended the scope of our mission.

When this body was organized its promoters were alive to the necessity of such a body, and like all other educative associations we must learn by experience. The College Faculties' Association was not fully in accord at first with us or we with it, and we did not fully understand each other the first, second, or third year. The fourth year was one of inquiry, and not until our last meeting here in Saratoga did we come to a full understanding of the province of each organization; then there was a comprehension of the duties, aims, significance of each. Since that point was reached, each organization has put forth its efforts for the good of all concerned.

One vital point of progression has been attained, viz., the requirement of a better education for matriculates in colleges. The reputable colleges have constantly labored toward this higher attainment. Another point is length of time required to graduate students, three sessions of at least six months each, and the constantly increased requirements of the students, and to accomplish this the professors have been fitting themselves, each in his special department, to impart all knowledge extant to the student.

From crude and experimental beginnings the National Association of Dental Examiners has arrived at a point of prime importance in this educational process. We noticed recently that some of the college announcements place much stress upon the fact that they have been recognized as reputable

schools by the National Association of Dental Examiners. And as this fact comes back to us it is our duty to deliberate carefully and see to it that no unworthy, incompetent school is recognized by this body. It is our duty to *know* the status of every institution asking admission to the class of regular schools. We owe this to ourselves, as we cannot plead ignorance. We owe it in an eminent degree to the present recognized schools. We live in an age of progress and cannot go backward. Our profession has been called a specialty. If it be a specialty, we have specialties within our specialty, and doubtless the time will come when these specialties will be better recognized.

At our last meeting at Asbury Park Dr. Jack, of Philadelphia, as chairman of committee on colleges, made a very clear and comprehensive report. Some weeks after adjournment Dr. Jack sent to our secretary, Dr. Meeker, his resignation as chairman of said committee. We urged him to reconsider his decision, but he insisted that it was final, which we very much regretted because of his knowledge of the subject, gained by much labor and at the expense of valuable time and money. We appointed to that position Dr. W. E. Magill, of Erie, Pa., who entered upon his duties with energy and had accomplished much when he was taken sick and left us for his long home. A good man has been taken from us. It is not the proper place to say more on this subject, so I would recommend a committee be appointed to draft suitable resolutions. Then we appointed your ex-president, Dr. L. Ashley Faught, of Philadelphia, to take up the matter where left by Dr. Magill's unfortunate demise. We feel under many obligations to Dr. Faught for the work he has done, being hampered as he was by taking the position at so late a date, but I am sure his whole soul has been in the work and we will find in his report matter for careful deliberation.

One other point to which I would call your attention. There are several incompetent, so-called dental colleges. It were well for this body to devise some means to counteract their work. It may be well for a committee of college faculties and the National Board of Dental Examiners to devise some means to counteract them. As the reputable colleges have increased, the usual result follow—counterfeits. They are easy to detect, but not easy to suppress, especially if we have a Chicago judge to interpret the law. Advocates of examination for all, regardless of diplomas, would tell us they have the remedy. All laws, however, are not in accord with that theory and we have to deal with what *is*. We will have a report of the committee on codifying what rules we have and can then better determine "where we are at." I call your attention to resolution on page 18, last report, "Boards of each State scrutinizing schools formed in their jurisdiction," and suggest under this head the roll-call of states and response from each state board present.

Perhaps my suggestions are too numerous, as we will have plenty of points for discussion when you hear from the committees.

The following resolution, offered by Dr. Barlow, was adopted:

Resolved, That this association request the National Association of Dental Faculties to enact a rule prohibiting colleges in their membership from receiving beneficiary students recommended by state boards and associations.

The following resolution, offered by Dr. G. Carleton Brown, was adopted:

Resolved, That boards of examiners, members of this association, be hereafter prohibited from recommending students to colleges for beneficiary or free scholarships.

Adjourned until 3 p. m.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The thirteenth annual meeting of the National Association of Dental Faculties was held at the Grand Union Hotel, Saratoga Springs, commencing August 1, 1896.

The following colleges were represented:

Birmingham Dental College—T. M. Allen.

University of Denver, Dental Department—W. E. Griswold.

Columbian University, Dental Department—H. C. Thompson.

National University, Dental Department—J. Roland Walton.

Atlanta Dental College—William Crenshaw.

Southern Medical College, Dental Department—Frank Holland.

Chicago College of Dental Surgery—T. W. Brophy and Louis Ottogy.

Northwestern College of Dental Surgery—L. L. Davis.

Northwestern University Dental School—Theo. Menges and George H. Cushing.

Indiana Dental College—G. E. Hunt.

Louisville College of Dentistry—Francis Peabody.

Baltimore College of Dental Surgery—B. Holly Smith.

University of Maryland, Dental Department—F. J. S. Gorgas.

Boston Dental College—J. A. Follett.

Harvard University, Dental Department—Thos. Fillebrown.

University of Michigan, Dental Department—J. Taft.

Detroit College of Medicine, Dental Department—G. S. Shattuck.

University of Minnesota, College of Dentistry—Thos. E. Weeks.

Kansas City Dental College—J. D. Patterson.

Western Dental College—D. J. McMillen.

Missouri Dental College—A. H. Fuller.

University of Buffalo, Dental Department—W. C. Barrett.

New York College of Dentistry—Frank Abbott

Cincinnati College of Dental Surgery—W. T. McLean.

Ohio College of Dental Surgery—H. A. Smith.

Cleveland University of Medicine and Surgery, Dental Department—S. B. Dewey.

Western Reserve University, Dental Department—H. L. Ambler.

Pennsylvania College of Dental Surgery—C. N. Peirce.

Philadelphia Dental College—T. C. Stellwagen and S. H. Guilford.

University of Pennsylvania, Dental Department—E. C. Kirk.

University of Tennessee, Dental Department—J. P. Gray.

Vanderbilt University, Dental Department—H. W. Morgan and W. H. Morgan.

University College of Medicine, Dental Department—L. M. Cowardin.

Royal College of Dental Surgeons of Ontario—J. B. Willmott.

The following colleges were elected to membership:

Howard University, Dental Department, Washington, D.C.—James B. Hodgkin.

Marion Sims College of Medicine, Dental Department, St. Louis, Mo.—J. H. Kennerly.

Dental Department of Tennessee Medical College, Knoxville, Tenn.—R. N. Kesterson.

The following applications for membership were reported favorably by the Executive Committee for final action next year:

University of Omaha, Dental Department, Omaha, Neb.; Ohio Medical University, Dental Department, Columbus, O.; Baltimore Medical College, Dental Department, Baltimore, Md.; Dental Department of Milwaukee Medical College, Milwaukee, Wis.

The New York Dental School announced its intention to complete its application next year.

The report of the secretary stated that there were in the United States fifty-three institutions teaching dentistry or conferring the dental degree, as follows: Dental schools in active operation, forty-six; organized during the year, two; in course of organization, one; corporations conferring the dental degree, four. Of the dental colleges, thirty-six were now members of the association, eight had

applications for membership pending, two had signified their intention of applying, and the two newly organized have announced in their catalogues their intention to comply with the rules of the association.

The report of the Committee on Schools, presented by its chairman, Dr. Follett, stated that reports had been received from thirty-five schools as to their equipment under the resolution adopted last year. These reports showed that the schools were well provided with lecture-rooms, and in most instances with ample laboratory and dispensary accommodations, with sufficient and appropriate appliances. They indicate a broadening in the general course of instruction, as well as fuller courses in all departments. Several colleges have recently added courses in bacteriology and extended their work in histology and pathology in practical ways. During the year 1895-1896 the number of matriculates at the thirty-five colleges reporting was 5,532; graduates, 1,363.

Mr. Melville Dewey, secretary of the Board of Regents of the University of New York, appeared before the association by invitation of some of the members, and gave a masterly address on the needs of the movement for higher education in professional ranks. Incidentally, Mr. Dewey explained some of the details of the system pursued in New York, and stated that, greatly to the surprise of those in charge of the various professional educational institutions in the state, the number of students had steadily increased since the higher requirements had been put into force by the Board of Regents.

Among the more important legislation enacted by the association were the following:

REGULATING THE ADMISSION OF STUDENTS.

Preliminary Examination.

The following preliminary examination shall be required of students seeking admission to colleges of this association:

_____ HIGH SCHOOL, _____, 189
To the Faculty of _____

M— _____ desires to present ————self as a candidate for admission to the Course of Dentistry, _____

He has pursued in this school the branches against which numbers appear—the numbers being the standard upon a scale of 100. Our course requires five recitations or exercises, weekly, in each branch. Our terms are ten weeks in length.

PRELIMINARY.

2 terms Orthography, standing.	2 terms Grammar.
2 terms Reading, standing.	2 terms History U. S.
2 terms Writing.	—
2 terms Arithmetic.	14
2 terms Geography.	

These are required in all cases and fourteen counts given for the same.

ELECTIVE.

3 terms University Algebra, through Quadratics.	1 term Commercial Arithmetic.
3 terms Geometry, plane and solid.	2 terms Astronomy.
2 terms Physiology.	2 terms Geology.
2 terms Physical Geography.	2 terms Natural History.
1 term Botany, with analysis of forty plants.	1 term Political Economy.
3 terms General History.	2 terms Drawing.
3 terms Natural Philosophy.	3 terms German.
3 terms English Literature.	3 terms Greek.
2 terms Civil Government.	3 terms Latin Reader, Cæsar.
2 terms Rhetoric.	3 terms Cicero, four orations.
2 terms History of England.	3 terms Virgil, six books.
3 terms American Literature.	1 term Bookkeeping.
3 terms Chemistry.	3 terms French.
	2 terms Manual Training.

(After session of 1901-1902 U. S. History becomes elective and entitles to two credits.)

FOR THE SESSION OF 1897-98.

Preliminary.....	14 counts.
Elective.....	18 counts.
Total	—
	32

FOR THE SESSION OF 1898-99, 1899-1900.

Preliminary.....	14 counts.
Elective	27 counts.
Total	—
	41

FOR THE SESSION OF 1900-01.

Preliminary.....	14 counts.
Elective....	36 counts.
Total.....	—
	50

For the session 1901-1902 and thereafter no preliminary credits; forty-eight credits from the studies classed as elective.

When the text-book mentioned has not been completed, the exact amount of work done should be stated.

The candidate above named is recommended as of good moral character, studious habits, and, judging from the past records, able to carry forward the work of a dental college course.

The rules for the admission of students take effect with the session of 1897-8.

— — Principal.

ADMISSION TO ADVANCED GRADES ON CERTIFICATES.

The colleges of this association may receive into the advanced grades of Juniors and Seniors only such students as hold certificates of having passed examinations in the studies of the freshman or junior grades respectively, such certificates to be pledges to any college of the association to whom the holders may apply that the requisite number of terms have been spent in the institutions by which the certificates were issued.

INTERMEDIATE CERTIFICATE.

Place—

Date—

This certifies that ————— has been a member of the ————— class in the ————— during the term of —————

He was examined at the close of the term in the required studies, as stated herein, and is entitled to enter the

Freshman Year.

Junior Year.

[List of Studies.]

[List of Studies.]

This certificate shall by correspondence be verified by the dean of the college by which it was issued. Without such certificate no student shall be received by any college of this association for admission to the advanced grade, except on such conditions as would have been imposed by the original school, and these to be ascertained by conference with the school whence he came.

LIMITING THE TIME FOR THE RECEPTION OF STUDENTS.

No member of this association shall give credit for a full course to students admitted later than ten days after the opening day of the session, as published in the announcement.

In case one is prevented by sickness, properly certified by a reputable practicing physician, from complying with the foregoing rule, the time of admission shall not be later than twenty days from the opening day.

In cases where a regularly matriculated student, on account of illness, financial conditions, or other sufficient causes, abandons his studies for a time, he may re-enter his college at the same or subsequent session; or where under similar circumstances he may desire to enter another college, then with the consent of both deans he may be transferred; but in neither case shall he receive credit for a full year unless he has attended not less than seventy-five (75) per cent of a six months' course of lectures.

ATTENDANCE, EXAMINATIONS.

Attendance upon three full courses of not less than six months each in separate academic years shall be required before examination for graduation. The year shall be understood to commence August 1, and end the following July 31.

Beginning with the session of 1896-1897, the examinations conducted by the colleges of this association shall be in the English language only.

A student who is suspended or expelled for cause from any college of this association shall not be received by any other college during that current session. In case the action of the first college is expulsion, the student shall not be given credit at any time for the course from which he was expelled. Any college suspending any student shall at once notify all other members of this association of its action.

APPLICATIONS FOR MEMBERSHIP.

Applications for membership in this association shall be made in writing, favorably indorsed by the faculties of two or more colleges of the association and the board of dental examiners of the state in which it is located.

Such application shall then be referred to a special committee of three which shall be appointed by the chair upon each application. The duty of this committee shall be to visit the school applying during its session, personally examine its facilities for teaching, methods of instruction and efficiency of the faculty, and report to the Executive Committee, which report shall, if favorable, be acted upon.

Each application shall be accompanied by a sum of money sufficient to defray the expenses of the special committee.

The constitution was so amended that hereafter it will require a two-thirds vote instead of a majority to elect new members.

The following resolution, offered by Dr. Peirce, was on motion adopted:

WHEREAS, In view of various reports frequently being circulated derogatory to the character of certain schools without any one being willing to prefer charges sustaining such statements,

Resolved, That the Executive Committee be and is hereby authorized to exercise full power to investigate all such innuendoes or charges by visiting the school or schools, or authorize some one to perform this duty; summoning witnesses, etc., in order that all such statements shall be sustained or proven false.

Resolved, That a sum to be determined by the officers, president, secretary and treasurer, be and is hereby appropriated for the purpose of paying expenses essential to the carrying out of the provisions of the above resolution.

The following communication from the National Association of Dental Examiners was read and on motion adopted:

Resolved, That this association requests the National Association of Dental Faculties to enact a rule prohibiting colleges from receiving beneficiary students recommended by state boards and associations.

The following, offered by Dr. Abbott, was adopted:

Resolved, That the committee of three appointed by the chair to report on applications for membership shall determine and report to this association at its next meeting the minimum requirements of such colleges as desire to

become members of this association as to length of course, plant, equipment, facilities for teaching and the number and efficiency of its faculty.

Dr. Brophy offered the following, which was adopted:

Resolved, That a graduate of a recognized dental college, who applies to a college of this association for the degree of Doctor of Dental Surgery or Doctor of Dental Medicine, shall complete one full course of instruction in said college and comply with all other requirements of the senior class.

The following, offered by Dr. Barrett, lie over till next year for final action:

Resolved, That after the regular session of 1897-98 the annual college term for the members of this association shall be seven full months.

Resolved, That it is advisable that the National Association of Dental Faculties in future meet in connection with the National School of Dental Technics at a time of year when the colleges are in session and before the time for the issuance of the annual catalogues.

A committee, consisting of Drs. Patterson, H. W. Morgan, and Kirk, appointed to consider the advisability of adopting the academic cap and gown for Commencement day, reported in favor of adopting the intercollegiate system and in favor of lilac as the distinguishing color for dental schools. Laid over till next year.

The following were elected officers for the ensuing year: J. P. Gray, Nashville, Tenn., president; Truman W. Brophy, Chicago, vice-president; Louis Ottofy, Chicago, secretary; Henry W. Morgan, Nashville, Tenn., treasurer; J. Taft, Cincinnati, Thomas Fillebrown, Boston, and B. Holly Smith, Baltimore, Md., executive committee; H. A. Smith, Cincinnati, Thomas E. Weeks, Minneapolis, and J. D. Patterson, Kansas City, Mo., *ad interim* committee.

The newly elected officers were installed, and the president announced the standing committee as follows: S. H. Guilford, Philadelphia, Pa., J. B. Willmot, Toronto (Canada), Theodore Menges, Chicago, Ill., L. M. Cowardin, Richmond, Va., and James Truman, Philadelphia, Pa., committee on text-books; J. A. Follett, Boston, Mass., G. E. Hunt, Indianapolis, Ind., C. N. Peirce, Philadelphia, Pa., A. H. Fuller, St. Louis, Mo., and D. J. McMillen, Kansas City, Mo., committee on schools.

Adjourned.

ETHER COLLAPSE.—One part of camphor to ten parts of olive oil, used hypodermically, is effective in ether collapse. One grain of camphor may be given.—*Medical Record*.

News Summary.

ANTIQUITY OF THE TRUSS.—Poncet has an interesting historic sketch of the evolution of hernial bandages in *Med. Moderne*, No. 11, with a description of a recently discovered ancient Phenician statuette of a god, at least 3,000 years old, which represents "unmistakably" several ruptures on the abdomen, with a double hernial bandage resembling those now in use.—*Centralblatt f. Chirurgie*, April 11.

CADAVER.—"What is the origin of the word 'cadaver'?" An abbot, about 1216, conceived himself an etymologist, and as a specimen of his powers left us the word "cadaver," a corpse, thus dissected: "Ca," quoth he, is abbreviated for caro; "da," for data; "ver" for vermibus. Hence we have "caro data vermibus," flesh given to the worms. Yet this hardly applies to the cadaver to-day in the dissecting-room.—*Dominion Dental Journal*.

SLOBBERING.—Dr. Sauchez de Silvera, we learn from *La Sperimentale*, has not thought this homely subject unworthy of study, and he has written an essay upon it. From the observations of Dr. Couetoux, of Nantes, and his own, he concludes that healthy infants never dribble; that infants who dribble only in the day time, though apparently in good health, have their digestive functions impaired; that infants who dribble at night are suffering from obstruction of nasal respiration to a greater or less degree; that these phenomena are altogether unconnected with dentition.—*Dental Register*.

TONGUE CONTRACTION IN HYSTEROEPILEPTICS.—Dr. Lafenauer concludes (*Med. Abstract*) that in hysterics typical contraction of the tongue can be produced either during the waking or the hypnotic state by stimulation of the acoustic nerve. These contractions are the result of a central reflex. They are also produced by the peripheric passage from direct stimulation of the lingual muscles. Contraction of the tongue may be associated with contractions of the muscles of the face, neck, trunk or limbs. Induced contractions do not differ from those observed spontaneously in hysterics.

THE DENTIST'S IN SHAKESPEARE'S TIME.—An interesting letter from the the Bishop of Winchester to Mr. (afterward Sir) William More has lately been unearthed. It bears date August 19, 1572, and contains this interesting paragraph: "I doe remember that you tolde me of one whome you knewe being skillful in trimming and stopping of tethe, if you can cawse the same fellowe to come unto me aboute that purpose you shalle greatlie pleasure me." This certainly looks as though any skill in dental science was at that time a rarity, and that even the best of operators were held so low in esteem that the term "fellowe" was thought good enough by way of description for them.—*Brit. Jour. Dent. Sc.*

WHAT NATIONS EAT.—A statistician compiled the following figures, showing the cost of nourishment for the various nations: The average Englishman consumes \$250 worth of food per year; Germans and Austrians, \$216 worth;

Frenchmen, \$212; Italians, \$110, and Russians only \$96 worth. In the consumption of meat the English-speaking nations are also in the lead, with 128 pounds a year per capita of the population; the French using 95 pounds; Austrians, 79; Germans, 72; Italians, 52; Russians, 50. The consumption of bread is reversed, as compared with meat. The English use 410 pounds a year; the French, 595; the Austrians, 605; Germans, 620; Spanish, 640; Italians, 660; Russians, 725.—*The Sanitarian*.

AN ELECTRIC HÆMOSTAT.—Mr. Lawson Tait has just added to his list of valuable contributions to surgery. His latest invention is an electric hæmostat, an instrument in which a current of electricity is utilized for the arrest of bleeding. The fact of the coagulation of albuminous tissues at 180 Fahrenheit has made this instrument possible, and it takes the form of a platinum wire enclosed in a pair of forceps, the wire being insulated in burned pipe-clay. When an artery is seized by these forceps and the current turned on further bleeding is prevented by the agglutination of the walls of the artery, which effectually prevents a further flow of blood. This invention has succeeded in a great number of cases.—*Brit. Jour. Dent. Sc.*

STUDY OF IRRUPTION OF THE TEETH INTO THE NASAL CHAMBERS.—Resume of reported cases and report of additional cases. Paper by Dr. A. W. MacCoy, Philadelphia, before American Laryngological Association. The writer gave a complete bibliography to date of this class of cases and related some of his own. Teeth in the nose may cause not only local irritation and purulent discharge but also reflex cough and laryngeal spasm. In one of his own cases, in the examination of the nostril in a case of sarcoma, the presence of a tooth in the nostril was accidentally discovered, and the question suggested itself as to whether such presence may not have been the exciting irritation which eventuated in malignant formation.—*Med. Record*.

OXYGENIZED CHLOROFORM.—Dr. Charles S. Elder (*Col. Med. Jour.*, June, 1896) says of the new anesthetic: Few patients are gotten completely under the anesthetic by this process. They seldom have perfect relaxation of muscles and loss of corneal reflex. To this first is to be attributed the rapid recoveries unattended by nausea and vomiting. It is not true that patients keep rosy lips and cheeks during the anesthesia any more than they do with chloroform, nor do they recover any better or quicker, provided the narcoses be of equal depth and duration. Chloroform, as ordinarily given, is a more powerful anesthetic than when given by the new process, therefore the anesthetic is apt to be more profound unless it is administered with more care. But to argue that oxygenized chloroform is safer for this reason is to insist that it is better because it is less efficient.

CHLOROFORM ANESTHESIA DANGEROUS TO MEAT-EATERS.—Some time ago Dr. Lauder Brunton called attention to the fact that death from chloroform anesthesia is probably due, not to the chloroform itself, but to the fact that chloroform arrests the elimination of tissue poisons, and that death is directly the result of the action of these poisons rather than of the chloroform. Dr. Brunton cited the fact that death from chloroform anesthesia is very rare in India, while it is becoming more and more common in England, which fact

he attributes to the increasing use of meat as an article of diet in Great Britain. Chloroform has long been a popular anesthetic in Edinburgh, but recently deaths from its use in that city have been very frequent. It is also noticed that gout is becoming very common. Both these circumstances are doubtless due to the increased consumption of meat resulting from the large importations of low-priced refrigerator meat.—*Modern Medicine*.

DIAGNOSIS OF SALIVARY STONES.—Lindemann relates an interesting case of a salivary stone observed in a woman of fifty years, who thought the neoplasm of a malignant nature. The tongue, especially in its left half, was enlarged and presented deep marks of the teeth and œdematous margins; the left sublingual salivary gland was also swollen and its surface was of a dark red color and covered with a network of sinuous veins; the tumor was decidedly hard and cartilaginous. The lymphatic glands of the chin were also quite swollen, the surrounding cellular tissue infiltrated and the skin reddened. She also complained of headache, sleeplessness, thirst, loss of appetite and great weakness; no elevation of temperature. The growth had gradually developed during six to eight months. A pseudo-neoplasm was suspected, and an incision exposed a salivary stone one centimeter in thickness and three in length; the concomitant symptoms then soon disappeared. The stone was unquestionably due to a deposit of lime-salt from the saliva, which element is present in large quantity in the saliva of certain subjects.—*Deutsche Medicinische Wochenschrift*.

CARBOLIC ACID.—In *The Polyclinic* Dr. Oscar H. Allis, of Philadelphia, has contributed an article worthy of widespread circulation. He says the use of carbolic acid in full strength upon the fresh tissues, raw surfaces, etc., causes the formation of a protective albuminate, a condition which renders further absorption impossible.

The same takes place when the strong acid is applied to a raw burned surface. It is not claimed that an aqueous dilution is safe when applied extensively to raw surfaces; on the contrary, the more dilute the more dangerous. In a case of washing out the thorax in the treatment of purulent pleurisy, the late Roger Keys, a most careful and judicious physician, came near losing a patient from absorption of the dilute acid.

"It will strike many of you with astonishment when I say that it would be safer to pour a gallon of pure carbolic acid into a purulent thoracic cavity than to pour in a gallon of water into which a single ounce of carbolic acid has been placed. I will go even further, and say that excess of the strong acid in a cavity such as an abscess cavity, or upon exposed tissues, as a burn or a fresh wound, does no harm, while excess of a dilute solution, if left in a cavity or used over an extensive raw surface, will be promptly followed by dangerous, if not fatal, toxic effects."

NEW METHOD OF ADMINISTERING CHLOROFORM.—M. Rosenberg contends that the dangers to both heart and respiration are occasioned reflexly by the irritating action of the chloroform on the terminations of the trigeminus distributed to the mucous membrane of the nose, that the same is true of any other anesthetic taken through the nose, and that this may be obviated

by first anesthetizing the mucous membrane of the nose by using cocain, which is an antidote to chloroform. Having tried this method in fifty cases, he concludes: 1. The commencement of anesthesia is less disagreeable for the patient, who never makes defensive movements. 2. The excitement stage is often wanting, and is always slight, except in cases of alcoholics. 3. During anesthesia it is very rarely a patient vomits, and if vomiting does occur, there is little retching. 4. Upon awakening the patient experiences no disagreeable sensation, and is not haunted by the smell of chloroform or ether. The method pursued is as follows: The patient is directed to blow his nose in order to clear the mucous membrane, then leaning forward or sitting (never lying), to snuff a centigram of powder consisting of 10 per cent of cocain hydrochlorat and some inert substance. Repeat in three minutes and commence general anesthesia. If the operation is prolonged, repeat chloroform continuously, drop by drop.—*Gazette des Hopitaux*.

TREATMENT OF ANTRUM DISEASE.—Dr. John E. Bacon describes his method of operation. It consists in cleansing and medicating the cavity through a small puncture in its inner wall in the inferior meatus of the nose, which can be made without general anesthesia and without pain. The instruments are a steel trocar and canula, two silver tubes, a silver wash tube, and a hard rubber syringe with rubber tube connections made to fit the canula and wash tubes. Cleanse the nares with the antiseptic spray, cocainize the inferior turbinal and floor on the side to be operated upon, insert a rubber operating speculum well into the nostril, and place the trocar beneath the inferior turbinal about one and one-fourth inches from the skin margin; by bending the septum to the opposite side the point of the trocar will point obliquely into the cavity of the antrum. A slight tap with a leaden or rawhide mallet will cause the trocar to penetrate the thin bone which constitutes the inner wall of the cavity. Care must be taken not to penetrate too deeply and so wound the opposite side of the antrum, as serious hemorrhage might result. In most cases the trocar can be pushed through the thin bony wall with the fingers alone, and this should be done, when possible, to avoid the mental shock which the blow with the mallet sometimes gives. The trocar may now be withdrawn, leaving the canula in place, and the rubber tube may be attached to the canula and the cavity syringed out with warm sterilized normal salt solution. The fluid will escape into the nose through the ostium maxillare and bring with it pus if any be present. After the cleansing, the trocar may be replaced and the nut removed, when the canula may be withdrawn over the trocar; now a silver tube is slipped over the trocar and the latter is withdrawn, leaving the silver tube in place, and this may remain as long as required without any irritation. This tube is exactly fitted by the silver wash tube, and the cleansing may be repeated without inconvenience. A solution of menthol and camphor in liquid albolene may be easily sprayed through the tube and aristol or other non-irritant powder may be blown into the antrum by the same means. It is imperative to thoroughly sterilize all instruments used, and to use only warm sterilized fluid in each case, to prevent infection.—*The Am. Therapist*, June, 1896.

The Dental Digest.

Vol. II.

CHICAGO, OCTOBER, 1896.

No. 10.

Original Contributions.

MEDICATED HOT-AIR BLAST.

BY W. H. SIMMONS, D.D.S., DECORAH, IOWA. READ BEFORE THE NORTHERN IOWA DENTAL SOCIETY, AT SPIRIT LAKE, AUGUST 11-13, 1896.

I shall present nothing new to you on this subject except a new way of applying this old remedy. It would be hard to find a dentist that does not make use of hot air, or better still, medicated hot air, in some shape or form. I believe that many of us do not fully appreciate its great value and give it but little thought on this account. There are many places where the hot-air blast can be used with the best of results, but I wish to call your attention to two in particular. First, the treating of putrid conditions in the oral cavity; and second, the obtunding of sensitive dentine.

We, as dentists, are battling every day with pulpless teeth, blind abscesses, putrescent pulps and diseased antrums. Our battle is not an easy one, for nature has never been a good friend to us poor dentists. She seems to prefer medical surgeons.

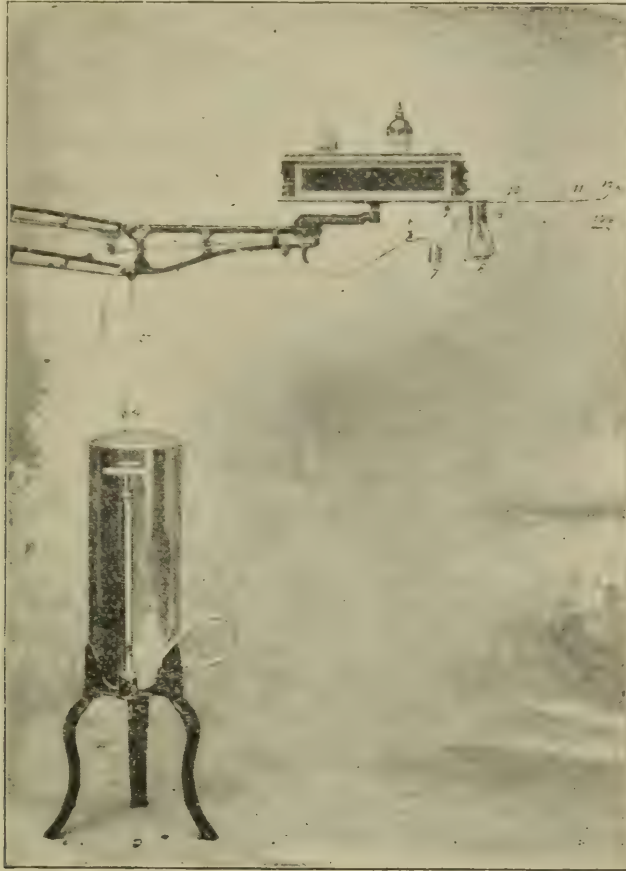
Some of the advantages in the use of the hot-air syringe are that you have two curative agents at work at the same time, viz., the antiseptic vapor and the hot air. The antiseptic fumes from an essential oil (oil of cassia for example), in connection with the alcohol and tannin, do not make the surroundings for Mr. Microbe as pleasant as they might be. This treatment alone I do not think sufficient to kill the germs, but it puts the diseased parts in such a condition that much less work is required to bring a case into subjection. While I have great faith in the medicated hot-air treatment, I would not depend entirely upon it as a sterilizer and antiseptic, but follow it up with one of the well-known remedies. I use it only as a preparatory treatment.

For example, I am to treat a tooth with a putrescent pulp and perhaps a blind abscess; in short, my treatment would be: First, the rubber dam; second, remove the decayed parts and get free access to the pulp-chamber; third, coax out as much moisture and putrid matter as possible without running an instrument farther than the lower portion of the pulp-chamber, never into the root-canal at the first sitting; fourth, apply the medicated hot-air blast with a strong current of air, plenty of medicine and plenty of heat; fifth, place in the cavity a good antiseptic, seal hermetically and leave from two to five days. You will say when the case returns for its next treatment that plenty of medicated hot air is good for a sick tooth. If pus and moisture still remain, repeat the treatment, and you can go at it with more freedom and run the absorbent cotton to the apex of the root without danger. There is nothing in dentistry that requires more judgment and good sense than these very cases. An abscess with a fistulous opening is not to be compared with it. Give these cases plenty of hot air and you will not hear the remark, so often made by our patients, that the tooth we have treated for them is sore and tender and they cannot use it. I have had cases where the lower third of the root-canal was filled with moisture and very sensitive; such cases are not rare, and by a few minutes' use of the alcohol and oil of cassia vapor from the hot-air syringe I have been able to run cotton to the apex without pain. The cotton came out perfectly dry and I filled the root at once. The quicker we can get a pulpless tooth or a blind abscess in a healthy condition the better will be the result. This is one reason why I like this treatment.

In the treatment of diseased antrums I have not had practical experience with the hot-air blast, so have but little to say on this subject. Dr. Brophy, of Chicago, whom we all know by reputation at least, considers it a fine treatment. Why should it not work to good advantage? The antrum is a difficult place to medicate, and an antiseptic vapor would have the advantage of most medicines used, in that all parts of the cavity would be medicated alike. Were I to use it in a case of this kind, I should use it only in connection with some other treatment. I believe where two curative agents can be used in these putrid cases without conflicting with each other, that a cure can be effected much quicker than by confining ourselves exclusively to one. I have been able to control hemorrhage with this blast after

removing the pulp, where some of the most powerful styptics have failed to do the work. So much for hot air in diseased conditions.

Obtunding Sensitive Dentine.—Before I proceed farther let me describe to you a hot-air syringe I have invented, and upon which I base all my arguments, and especially that of obtunding with hot air. I have used this form of syringe in my practice for two years.



You will notice by the cut that the syringe is attached to the bottom of the tray, that the air supply comes from a compressed air cylinder, marked No. 3, and that the air in passing to the end of escape passes through No. 7, which is the receptacle for medicine; the medicine is here volatilized; it is then heated as it passes through No. 13, and is then conducted to the parts to be treated by No. 10; this you will notice will give a steady blast.

In obtunding sensitive dentine with a medicated hot-air blast these things are to be remembered, that you must have an even heat and an even current of air, so arranged that it will work all the

while you are operating and leave both hands free for the operation. It must be so constructed that the blast and heat can be easily controlled. These points I worked over a year to obtain, and the syringe represented in the cut is the result.

Some of the reasons why the medicated hot-air blast obtunds sensitive dentine are these: First, a blast of air, either hot or cold, has an obtunding effect; second, many of the medicines used are obtundents to some extent—menthol, essential oils, tannin and alcohol are some of the medicines used; last, but not least, comes the obtunding effect of hot air, which has been considered a valuable obtundent by those who stand high in authority. Heat affects the sensibility of dentine in two ways—by its obtunding effect, and by extracting from the dental tubuli the moisture they contain. Some writers claim that the dentine contains nerve fibers, but the majority of those best qualified to know say this cannot be proven. There is one thing we do know, and that is that it contains moisture, and that this moisture is the medium which transmits feeling to the nerve proper when the exposed portion is irritated, as with a bur or excavator. I take a pair of nippers and cut a covered electric wire; the ends of the wire are not over one-hundredth of an inch apart, but the connection is broken and the message ends when it reaches this space, though the covering may still remain perfect. Is not the action in the dental tubuli similar to the experiment with the wire? If by the use of volatile medicines and hot air, or if by any other means, we have removed the moisture from the tubes, we have made an air space which breaks the connection between the irritated part where the bur or excavator is at work and the living pulp within the tooth. Whether this be so or not, I like to think that the dental tubuli, so far as the moisture is removed, are filled with a resinous gum from the medicines used. A piece of glass held before the syringe will show the rapid evaporation of the volatile medicines and a resinous deposit will be left on the glass. I can see where, if these tubes are filled as far as they are made dry with this gum, that it would be an advantage in cleansing a pulpless tooth as well as assisting in obtunding sensitive dentine. I notice that teeth which have a hard, firm dentine are as a rule more sensitive than the soft, chalky ones, and that they are much more difficult to obtund. It would stand to reason that in the firm dentine the dental tubuli are smaller, which leaves the

walls thicker, thus giving a more solid substance to remove the moisture from. This is probably one of the reasons why these cases are more difficult to bring into subjection. The "porous tooth," if I may use the expression, can be more thoroughly obtunded by removing the moisture than those having firm dentine.

The question that interests us most is not so much the theory of relieving pain, but a practical application of some method that will produce the required result. For two years at least three-fourths of the cavities I have prepared for filling have been prepared while the medicated hot-air blast was directed into the cavity. I have watched its action closely and know I can safely say that the pain is reduced in any case at least one-third. I have in many instances commenced to prepare a cavity without the blast, found it sensitive, applied the blast and then cut the cavity absolutely without pain and worked upon the tooth as freely as though it were a dry bone. Cases of this kind of course are exceptions. I have used it upon patients who were perfectly ignorant of its use and had them say when the cavity was prepared: "That gives relief, doesn't it?"

Here is a case to which I wish to call your attention. The operation was to expose the pulp in a sound but dwarfed lateral, as I wished to correct an irregularity and use the root to support a bridge. The patient was a very timid lady with rather sensitive teeth. I directed the hot-air blast on the tooth at the gum line, not exceeding one minute; slight pain when the bur passed from the enamel to the dentine; drilled through the dentine and into the pulp as much as an eighth of an inch; the patient did not flinch and said there was not a particle of pain. This has been the only case where I have had the opportunity of testing its use for exposing a pulp in a sound tooth. It may be that in a larger tooth it would not give the same results. I do not and never have claimed this to be a painless method, but that it reduces the sensibility I have proven to my satisfaction in my practice, and to the satisfaction of others who have seen it used at clinics.

If you ever try the hot-air blast in your practice remember this, that you cannot learn to use it in a day or a week so as to get the greatest results from its use. The obtunding of sensitive teeth is such a delicate matter that whatever method is used must be applied with knowledge and experience. If we are to give relief to our patients we must make it a study, so as to know what to do and

what not to do. If you were to direct a steady blast of warm air into a cavity and every few minutes give it a sudden blast of cold air from a chip-blower, or use a syringe full of ice-water, you would probably decide that a hot-air blast gave more pain than relief. Use a steady blast of medicated hot air, sharp instruments, and still sharper judgment, and your patients will tell you that you fill their teeth with less pain than any other dentist they have ever had work for them, unless they have had cocain drawn through their teeth by electricity.

THE FIRST PERMANENT MOLAR.

BY J. T. MARTIN, D.D.S., MUSCATINE, IOWA. READ BEFORE THE NORTHERN IOWA DENTAL SOCIETY, AT SPIRIT LAKE, AUGUST 11-13, 1896.

There seems to be an almost universal agreement that this tooth is the seat of caries, and consequently is in need of our services more frequently than any other tooth of the permanent set. This fact would seem to warrant its frequent consideration and is the excuse for the present paper. Originating in a manner identical with, and at a time only a little later than, the deciduous teeth, it is subject to many of the conditions which result in the formation of these very temporary structures. Each of the other teeth of the permanent set has its origin in a budding out from the neck of the enamel organ of some other tooth, but this tooth is developed, according to Tomes, "by a similar budding out of epithelium from that same primary epithelial lamina whence the temporary teeth originate."

This similarity of origin links this tooth with the temporary teeth. In commenting on this tooth Dr. Wortman says: "There is one thing upon which I would strongly insist, and that is that the first true molar in the human dentition is a persistent milk molar." The first manifestation of a process which is to result in the formation of a tooth is observed about the seventh or eighth week of foetal life, when the enamel organs for the temporary teeth begin to develop, and by the fifteenth to seventeenth week the enamel organs for first permanent molars are similarly developed.

The dentine cap for this tooth appears, in other words calcification begins, at about the sixth month of foetal life, and at birth the cap is about .039 to .078 of an inch in height. The calcification of crowns of temporary incisors is complete at this period, and the crowns of

other temporary teeth nearly so, the roots being gradually completed after birth as the teeth are erupted. These teeth then—the temporary—are in a stage of development much better adapted to withstand the changes, and the frequently interrupted, imperfect nutrition, incident upon birth, than are the first permanent molars, which, as we have seen, are at this period just in the midst of active calcification of their crowns.

Considering the frail structure of the temporary teeth, is it strange that these teeth, developed under such similar although in some respects less favorable conditions, are so frequently of poor structure?

With good health of parent and child, plenty of proper food, hygienic surroundings and suitable exercise, there is no doubt of nature's ability to produce first permanent molars of stamina equal to any of the other teeth. However, when we consider the critical period during which its active formation is carried on, how frequently from carelessness or ignorant neglect these conditions more or less completely fail of fulfillment, ought it to be a matter of surprise that so large a proportion of these teeth are of what we term poor structure?

What the real nature of this deficiency is remains more or less a mystery. It has been generally accepted to be the deposition of an insufficient *quantity* of lime salts and is characterized as imperfect calcification. More recent experiments, however, seem to indicate that this is not the true explanation; that it is not necessarily so much a deficiency in amount of inorganic material as a failure to properly build together the materials as furnished. Very vastly differing results follow manipulating a given material in different ways. It seems probable that the character of the tooth-germ and the manner in which it uses the materials furnished, and the resulting nature of the organic matrix may offer a possible solution of the question.

Tomes, in his work on dental anatomy, says: "The insoluble salts of lime are altered in their behavior by association with organic compounds; if a solution of a soluble salt of lime be slowly mixed with another solution capable of precipitating the lime, the resultant lime salt will go down as an amorphous powder, or under some circumstances in minute crystal, but in the presence of gelatin albumin and many other organic compounds the form and physical character of the lime salts are materially altered." And again, "Teeth owe

their hardness to an impregnation with salts of lime; the organic matrix may be of albuminoid character, in which case the tooth is of horny consistence and is spoken of as "cornified," or the matrix may be like that of bone, gelatinous, in which case the tooth is more richly impregnated with salts and is spoken of as "calcified." However, be the real explanation of the difficulty what it may, its frequent occurrence is very largely the result of ignorance, not only of the process of dentition, but even of the commonest rules of health, and the only hope of general improvement in the condition of this tooth lies in raising the standard of information on these subjects. Even a very imperfect rudimentary knowledge of the periods of greatest danger from interrupted nutrition and the essential elements of food would result in great benefit.

Until there is a more perfect general understanding of the subject we must meet the individual cases as they present and treat them according to the conditions found, being careful that the instructions given at these times may be instrumental in hastening the day of general understanding.

There is great difference of opinion as to the methods of dealing with the first permanent molar, from those who advise its universal extraction, almost regardless of conditions, to those who advise its almost equally universal retention, likewise regardless of conditions. Personally I regard the loss of this tooth as a misfortune usually, just as the necessity for a filling is a calamity. It would be desirable to avoid the necessity for either, but I regard its loss as much less of a calamity if it occurs at an age which permits the second molar to move forward bodily and occupy the space.

Many cases are presented to our notice before—say the twelfth year, when all reasonable indications are that the tooth cannot be retained for more than a few years. When the bicuspid is not in position I would usually advise the temporary filling of tooth to relieve pain and insure its use, with the understanding that upon the appearance in place of the bicuspid the molar be extracted.

In all cases, except a possible few where the extraction of the first molar for regulating purposes may be indicated, it seems to me best to save these teeth when there is a prospect of their remaining for a number of years with reasonable effort, but if they are to be lost before the twentieth to twenty-fifth year their removal as soon after the bicuspid is in place as possible will result in the best

masticating surface for the longest time obtainable under the circumstances.

If the second molars on lower jaw are in place before this tooth is extracted the probability is that the space will remain or the second molars will tip forward, making a very faulty and undesirable articulation.

The upper molars act quite differently, and I have frequently seen cases where the first molar was extracted between the ages of twelve and sixteen and the spaces entirely closed. It is impossible to state definite ages when it is wise to extract this tooth, but it is safe to say that the best results are likely to follow its removal after bicuspid are in place and before the second molar appears. If it is not deemed advisable to remove the tooth, use all reasonable means to retain it in place with full restoration of crown until adult life; it is better to have a space between bicuspid and molars, corresponding in width to first molar, than the evil effects of an articulating surface such as will probably follow the tipping forward of the second molars. The practice of filling the roots, and either removing or allowing process of decay to remove the crowns, has been more or less advised. Let me urge that one of two courses be pursued—either extract at once or preserve the whole tooth in as nearly its original form as possible.

Another consideration is the improved condition and usefulness of the wisdom tooth, so frequently observed in those cases where the second molar occupies the place of the first molar.

Many objections are urged against the removal of the first molar, but chief among them seems to be that its early removal results in a failure of jaw to properly develop, and that there is a possibility of transmitting to succeeding generations the thus shortened jaw, causing irregularity of the teeth.

The weight of testimony seems to me to point to the fact that the jawbone proper is developed independently of the teeth. One quotation from Talbot will suffice to state the point, and while he draws entirely different conclusions from his observations they hardly seem justified. He says: "In my investigation during the past fifteen years for the cause of irregularity of the teeth I have become convinced that the jawbone proper and the alveolar process are two separate and distinct structures. The manner of their development and their function are independent of each other."

And again: "The alveolar process is made up of soft, spongy tissue, for its development, shape and size depend entirely upon the teeth and not upon the jaw."

In studying the eruption of teeth it is learned that the alveolar process is built up around the teeth, increasing by deposits upon its edge next to crowns of teeth as the teeth advance. From these statements I believe we are justified in concluding that the presence or absence of a tooth or teeth does not affect the development of the jawbone, and that the presence or absence of teeth does affect the physical character and amount of alveolar process. The process is largely responsible for facial expression and a change in its form may, in fact does, correspondingly affect the form and shape of face. Also, that following the removal of tooth or teeth there must be a change of features dependent upon the amount of change that takes place in the process. But the very fact of the dependence of process upon presence of teeth is evidence that if in a succeeding generation the teeth are present the process will be developed to accommodate them.

Other objections are urged, but they serve to prove not so much that these teeth should not be extracted, but that when they are removed it should be under the conditions I have mentioned.

USE AND ABUSE OF BRIDGE-WORK.

BY WM. H. STEELE, D. D.S., FOREST CITY, IOWA. READ BEFORE THE NORTHERN IOWA DENTAL SOCIETY, AT SPIRIT LAKE, AUGUST 11-13, 1896.

Mr. President and Gentlemen:—I will not attempt to write an elaborate paper on this subject, but will touch simply on a few practical points here and there, in order to bring the subject before you for discussion.

Dr. Barrett expresses my idea in his article on bridge-work in the "American System of Dentistry," where he says: "A few teeth is the limit to which bridging can be satisfactorily carried." I think it would have been much better if Dr. Barrett had been more explicit and stated just how many teeth a bridge, or section of a bridge, could be expected to safely carry under favorable conditions, according to his experience and judgment. If he had done so it might have been the means of saving many a young bridge-worker from humiliating failures.

The force which the teeth have to resist when doing only their natural amount of work is the force capable of being exerted by the muscles of the lower jaw, in its different movements during the process of mastication. This force has never been accurately measured, and there is no probability that it will ever be satisfactorily, as there are too many conditions involved. This force, of course, is greatest when the jaw is acting in its natural positions. Dr. Hans Block, of Germany, gives the minimum force at 300 pounds, the maximum at 500 pounds. The late Dr. J. J. R. Patrick gave it at 65 to 85 pounds. There is a wide field for guessing between these two estimates, but, for the purpose of illustration, we will take 210 pounds as the average. This divided by 14 gives 15 pounds as the pressure each tooth would have to sustain, providing the teeth are all perfect, and that they articulate so that each tooth sustains its full and equal share of the work, which is very seldom the case. Now let a bridge be placed in the mouth carrying the fourteen upper teeth, using the two cuspids and the right and left second molars as piers; what is the result? We are forcing these *four* teeth to do the work of *fourteen* and sustain the whole force of the lower jaw in every movement of mastication, equal to a pressure of $52\frac{1}{2}$ pounds on each tooth.

Again, take a bridge on one side of the mouth, carrying the two bicuspid and first molar, anchored to the second molar with a full cap, and to the cuspid with an open-face cap. In this case two teeth *apparently* have to do the work of five, but *really* do the work of ten, as most people who have a bridge of this kind use but one side of the mouth in mastication.

In case of the first bridge mentioned, biting on the section between the cuspid and molar has a tendency to motion, the cuspid acting as a fulcrum; in fact, any bridge with a central pier is liable to pivot on that pier, as it is almost impossible to set a bridge so that both terminal piers shall be equally rigid. The second bridge is open to the same objections; the whole force of the jaws often thrown on the middle of the bridge, causing the open-face cap to give, this being the weakest point, and throwing the whole strain on the posterior terminal anchorage.

It is an impossibility to place a bridge of any kind in the mouth without forcing the teeth to which it is anchored to do a large amount of unnatural work, and the ratio increases with every tooth

added to the bridge; and as a natural consequence the permanence and usefulness of the bridge decreases in the same ratio.

It is an undisputed fact, that to continually overwork and abuse any organ of the body is a transgression of nature's laws that will not be tolerated, the penalty for which is disease, and it must be borne in mind that the teeth are no exception to this rule. The unnatural strain, pressure, overwork and motion they are subjected to when used as piers for a bridge causes inflammation, absorption, and ultimate loss of the teeth.

On the immovability of a bridge depends to a great extent its usefulness, healthfulness and permanence, and it is unreasonable to expect the roots of two teeth to rigidly anchor a bridge carrying five or six teeth. If it is not immovable it will not be impermeable, and if it is not the latter it will soon become practically useless, unhygienic and dangerous. The indiscriminate use, or I might say abuse, of bridge-work is working a great deal of harm and is creating a strong prejudice against it in the minds of the people, which would not be the case if it were confined to its legitimate field.

Dr. Haskell defines the legitimate use of bridge-work: 1st. In supplying the loss of the lower bicuspid and molars where there is a posterior molar remaining. 2d. On the upper jaw bridges of not too many teeth are useful in the case of loss of posterior teeth, if there are firm anchorages.

In the loss of anterior teeth the bridge piers are subjected to a lateral strain in biting hard substances that often makes them a failure. Great judgment must be used in constructing such dentures that there be *no occlusion* of the lower teeth.

Among the most objectionable features of bridge-work are the necessity of mutilating good healthy teeth to adjust bands, etc.; the unsightly appearance and impracticability of bands and open-face caps on the anterior teeth; the expense and difficulty of repairing; the tendency to drag out and destroy the teeth to which the piece is anchored; and last but not least, the unhygienic and disease-breeding feature.

I have removed many bridges where the bridge, piers and all, could be removed with the fingers of one hand; and, indeed, one hand is all anyone would care to use for the operation, as the other would be needed to shut off the olfactory organs.

ALVEOLAR ABSCESS.

BY H. W. KISER, D.D.S., LANSING, IOWA. READ BEFORE THE NORTHERN IOWA DENTAL SOCIETY, AT SPIRIT LAKE, AUGUST 11-13, 1896.

An abscess is a pus cavity within the tissues, wherever it may be located. The term alveolar abscess applies to an abscess brought on by inflammation at the apical space by some tooth with a dead pulp. It is a disturbance that has robbed many a patient of a night's sleep and in return given a night of misery and pain. We as dentists cannot be too well acquainted with the various forms and nature of this trouble.

The first thing noticeable in this disease is a slight soreness of the affected tooth or root, and it has a tendency to become somewhat loosened. As the inflammation continues the membranes lining the walls of the root and socket become congested with blood. The fibers become thickened, slightly raising the tooth from the socket. The patient will complain of the tooth being longer than the rest, and that the least concussion will cause pain, which in many instances becomes intolerable. The gums over the affected root usually become congested and inflamed. The patient frequently complains of fever.

If this condition continues for any length of time the tissues will finally break down and pus will form. During this process there is great pressure at the apical space and the result is absorption of the surrounding tissues. The pus once formed will always burrow its way in the direction of least resistance.

The external lamina of bone being harder than that at the apical space frequently causes considerable destruction of bone before the pus finds an outlet.

There are various forms of alveolar abscess. In the acute form we frequently notice that the pus finds its way out through the soft tissues very readily, and thus the destruction of bone is not so great and is slower in its progress. Another form is where the pus has burrowed its way through the bone, separating the periosteum from the bone, and thus forming a pus cavity for itself. A great deal of swelling usually accompanies this variety. Where the periosteum has been stripped from the bone and is left in that condition any length of time, there is danger of necrosis of portions of bone. It should receive prompt attention in order to avoid it. The third form I will mention is where the pus follows the peridental mem-

brane along the side of the root and is discharged at the margin of the gums.

An alveolar abscess of the acute variety, when left to itself, is apt to become chronic. So long as there is a dead pulp constantly discharging septic matter into the apical space the abscess will not heal. In case of necrosis an abscess is liable to assume the chronic state. It is usually detected by a fistulous opening leading to the affected tooth and discharging more or less pus. In regard to this fistulous opening we meet with a variety of places for its location. As a rule the orifice of the duct will be found over the buccal surface of the root of the affected tooth. I have met with cases where the opening had formed upon the cheek, others upon the chin, but such cases are somewhat rare. The chronic form of abscess will sometimes be present for years, causing very little discomfort, except that there is a constant discharge of pus, which makes it somewhat unpleasant for the patient.

There is one form known as the blind abscess, in which there remains a mass of tissues in the enlarged apical space with which more or less pus is intermingled. This condition may continue for some length of time with but very little change, the pus burrowing through the tissues without the patient's knowledge. A tooth in this condition is liable to become sore and attract the attention of the patient from time to time. The pulp-chamber being in a putrescent state constantly discharges a sufficient quantity of septic matter into the apical tissues to prevent healing.

Treatment.—In giving my course of treatment I will be brief as possible. The treatment in a majority of cases presents but little difficulty. We have all classes of patients to deal with. Many of them will walk the floor night after night, suffering severe pain, until the face becomes badly swollen and the tooth is in such a sore condition that it will hardly bear touching. Then they go to a dentist to obtain relief.

When the tooth or root is a worthless one extracting is all that is necessary, but when the tooth or root can be utilized in any way and the patient so desires, we must pursue another course. When the tooth is in a very sore condition I open, if possible, into the pulp-chamber so the pus can be discharged through the tooth. Where the opening at the apex of root is closed I open with some suitable broach. In cases where the pus has burrowed its way through the

bone I discharge it at once by the use of a bistoury, after which I dismiss the patient for a few days, or until the soreness has somewhat abated.

When the tooth is in a condition ready for treatment the first step is to remove the cause of disturbance, which is the septic contents of pulp-chamber and root-canals. In using a barbed broach we cannot be too careful, especially when we rotate it in the canal, as it is liable to break and a portion of it be left in the canal, which at times is very difficult to remove. For ordinary treatment I very seldom use any sort of drill to enlarge the canal. In my experience I have found there is too much danger of breaking off the point of the drill when any distance up in the canal, which many times seems almost impossible to remove, and in cases where the root is very crooked or has the shape of a bayonet, one is apt to drill through the side of it. I flood the canal with peroxid of hydrogen or pyrozone as soon as I have the contents removed, then pack with cotton saturated with some good disinfectant and seal the cavity for several days. Repeat this until it is in a healthy condition, after which I fill the root.

In the chronic form of abscess the treatment will differ somewhat. There is generally no soreness and little inflammation to contend with. We find some respond very readily to our treatment, while others are very slow in making any change. In a blind abscess usually all that is necessary is to open into the pulp-chamber, so that free access can be had to the canals, remove what is left of the dead pulp, flood well with peroxid of hydrogen or pyrozone, pack with cotton saturated with some disinfectant, seal for a week or ten days, and repeat if necessary until there is no more weeping at the apex.

In an abscess with a fistulous opening an entrance should be gained, if possible, to the abscess at the apex of root, so that medicine can be forced through the opening into the abscess. By placing some temporary stopping in the cavity and inserting the needle of a syringe, medicine can be forced into the abscess, so that it will make its appearance at the fistulous opening. The remedy I generally use for this purpose is creasote, with a few iodin crystals dissolved in it. There is one objection in its use, for if not properly handled it is liable to discolor the tooth. Where we cannot gain an entrance to the abscess at the apical opening, medicine can be injected with

some suitable syringe through the fistulous opening with fair results. As soon as we have succeeded in bringing on a healthy condition the root can be filled and nature will take care of the rest.

When we meet with cases that will not yield to this treatment we are apt to find the membrane at the apex of root destroyed. The point of root may be partially absorbed and in a roughened condition, or there may be a deposit of calculus. In such instances it will be necessary to gain an entrance to the apex, smooth the root or remove the calculus, as the case may be, in order to arrive at a cure. Where necrosis is present it cannot be cured until the dead bone has been removed.

I feel sure that I have not presented anything new in this paper before this society, but I trust it may bring forth a discussion from which we may all learn something and be thereby benefited.

ALLOY FILLINGS; A SUGGESTION TO EXPERIMENTERS.

BY WILLIAM H. TRUEMAN, D.D.S., PHILADELPHIA, PA.

Many references to the manipulation or the behavior of amalgamated alloys, and of fillings made therefrom, that would otherwise be instructive, are confusing, from the fact that the writers neglect to state the composition or character of the alloy they have in mind. One states, for instance, that a lock of cotton, or a pellet of bibulous paper, makes by far the best tool to thoroughly impact the amalgamated alloy in place, and claims that to secure a good filling the mass must be soft and plastic enough to permit its use in this way. Another uses it dry, that is, as free from surplus mercury as it can be worked, and directs that it be packed in place with mallet force; while another ignores both methods, declaring them alike faulty, finding nothing so satisfactory for this purpose as a properly manipulated burnisher.

While making due allowance for "personal equation," in accounting for this diversity of opinion among practical operators of acknowledged ability, such expressions without further explanation can hardly be considered instructive. The explanation, unfortunately, is seldom given. If the first should clearly state that his favorite alloy contained a preponderance of silver, and the champions of the mallet and burnisher should inform us that theirs was more largely composed of tin, the mystery might be solved.

Having for many years made all the alloy I have used, and having experimented largely with differing formulæ, I have been much impressed with the importance of varying the manipulation of each differing composition to get from it the best possible result. I have also been impressed that the importance of this is not so generally recognized as it should be, and that there is here a wide field promising good results for those able and willing to do a little hard work for the general good, in solving the relation of manipulation to the composition of amalgamated dental alloys.

In the meantime, as a help in this matter, I would suggest that each operator should become familiar with the composition of the alloy he uses, not necessarily its exact formula, although this is desirable; but he should know at least whether it is a silver-tin or a tin-silver alloy; should also know, closely, the relative proportion these two principal metals bear to each other, and should always specify that when speaking of its manipulation or behavior in the mouth. The other metals, while modifying the character of the alloy to a far greater extent than the proportion they bear to the mass, are quite subservient to its principal and essential components.

I have used alloys that were at their best and made the best fillings when used several hours after amalgamation, and others that became absolutely unworkable ten minutes after mixing. Some that required to be used very plastic, and others that were worthless unless the surplus mercury was expelled by squeezing between the jaws of a bench vise. Any attempt to use these differing alloys by a common method would result in a large percentage of failures; but used, each in a way that suited it best, they have produced in the long run equally good results, so far as tooth preservation is concerned.

When you tell us *how* you mix and use your amalgam, or speak of its virtues or its vices, kindly let us know *what* alloy you are using. Your experience will then be of value and suggestive to an inquiring mind.

WALRUS' WHISKERS FOR TOOTHPICKS.—A new industry has been started in Alaska—the preparation and sale of walrus' whiskers for toothpicks. When a walrus is killed the natives pull out each separate hair. They are thoroughly dried, arranged in neat packages and exported to China, where they are much sought after by the upper classes.—*Invention*.

Digests.

ETHER AND OXYGEN AS ANESTHETICS. By John L. Corish, M.D., Brooklyn. After citing some cases in which he has combined ether and oxygen, he speaks of oxygen as an anesthetic. An extended series of experiments in the employment of ether, chloroform, nitrous oxid and oxygen leads me to the following conclusions: (a) The excitement stage due to the cutting off of the oxygen from the circulation, thereby causing nervous reflex muscular movements and irritation of the air passages, is abolished when the oxygen is added, on account of the blood receiving sufficient oxygen. (b) The cyanosis which is caused by the reflex paralysis of the vasomotors, thereby allowing dilatation of the venous and contraction of the arterial blood-vessels, due to a lack of oxygen at the nerve centers, is little marked or entirely absent. (c) That there is no increase of the mucous secretion is due to the removal of the cause of irritation and congestion of the mucous membranes. This nuisance, which in many instances is intolerable, particularly in the surgery of the nose and mouth, has in some cases in which the secretion entered the larynx caused dangerous symptoms of asphyxiation or subsequent pneumonia. (d) The vomiting and nausea, owing to the congestion of the stomach and irritation of the palate, are alleviated, and this of necessity does away with the danger of food becoming lodged in the air passages. (e) The anesthesia may be continued without stertor. This symptom, due to muscular paralysis of the palate, is not a necessary accompaniment of anesthesia. It shows that excess of the anesthetic is being used. The palate is controlled by both voluntary and involuntary "forces." This symptom is a very good guide for the operator to go by. (f) The recovery from anesthesia is quicker and more complete, owing to a minimum of ether being used. The recovery cannot be hastened by the employment of oxygen separately after the operation. (g) The amount of ether used is just sufficient to keep the patient under its effects, and when thoroughly mixed with the oxygen (compound) no serious symptoms can result. The patient will not breathe at all if oxygen be given to the point of

saturation, and therefore no more ether will be taken in than is required until the respiratory center calls for more oxygen. (h) Owing to the amount of oxygen stored up in the system by this method the etherization may be discontinued at times for from fifteen to thirty minutes, and complete anesthesia may be readily and quickly reinduced in thirty seconds, if occasion requires, by application of the previous method. This advantage to the specialist in pharyngeal operations must be apparent. (i) Owing to the character of the heart-beat not being much altered, the combined anesthetic can be given with comparatively less danger in cases of stenosis and insufficiency of the cardiac valves.

Finally, I wish to state that I believe, and think it will be borne out by subsequent experiments, that when the oxygen is given in superabundance in connection with ether, a double effect will be produced, that is, an anesthesia from ether primarily and from oxygen secondarily. Ether is eliminated from the system by means of the lungs through respiratory efforts. If we can supply sufficient oxygen to the system, so that the respiratory center is not irritated or rendered dormant, we prolong our anesthesia until such time as the ether is split up chemically and passed off through the skin. Another point to be observed in the use of oxygen with ether is this—in extensive operations, in which great loss of blood is to be expected, and it is usual to constrict the limbs, it would be advisable to administer oxygen before the tourniquet is applied, so that when the blood is allowed to re-enter the circulation it will be in a condition more in conformity with that of the rest of the body.

With regard to the anesthetic power of oxygen when properly induced, in its application to surgery, I am positive that it will be of very great value in operations on young children who may require surgical interference of short duration. Operations about the mouth and nose could be performed to the entire satisfaction of the operator, as the apparatus could be dispensed with immediately on the cessation of respiration. Under the condition of oxygen anesthesia, so to speak, the system is saturated with oxygen, the blood in the veins assumes an arterial hue, and the surgeon would have difficulty in recognizing venous from arterial hemorrhage, but this would be insignificant in comparison to the benefits obtained.

It is to be hoped that further research into this very important subject will prove that as we perfect our apparatus we will approach

the point where we will use the minimum amount of ether and the maximum amount of oxygen.—*Medical Record, September, 1896.*

LOSS OF TWO TEETH BY A RUBBER RING. By Dr. Fleury, of Rennes. Translated from *Revue Mensuelle de Stomatologie* by William Rushton, L.D.S. Eng. Miss X—, aged 15 years, strong, well built, and without any hereditary taint, came to Paris in the following condition: Her two central incisors in the upper jaw were moved outward at an angle of forty-five degrees. The teeth were loose, painful and half out of their sockets, the necks being four to five millimetres outside the gum. The upper lip had for a long time ceased to cover them, so that they were permanently exposed to the air. Around and above the teeth the gum was fungous, unhealthy and bled readily. The rest of the buccal mucous membrane was healthy, except a slight gingivitis due to tartar. The vault of the palate presented no malformation.

The lateral incisors were sound, but separated from the centrals by a space large enough on each side to admit of another tooth of the same size as the laterals. In short, there was quite a *diastema* on each side, only, instead of occurring between the canines and bicuspid, its situation was between the centrals and laterals. In the lower jaw all the teeth occupied their normal positions, and the molars articulated perfectly with their corresponding teeth in the upper jaw, but the lower incisors did not impinge on the upper ones, these latter being so far out of their normal position.

The mother, who consulted me to know if anything could be done to preserve the teeth and make them regular, gave the following details: Three years before she had taken her daughter, then 12 years old, to a dental institute of some notoriety in Paris, the object being to have the teeth regulated. At that time the four upper incisors were contiguous, and to make space the two upper six-year molars were extracted. From the time of this operation up to the end of September, 1895, four regulation plates were worn. I have seen the last but one. It is a platinum and vulcanite plate carrying in front two hooks to which were fixed rubber rings passing round the necks of the teeth. The mother said the three other plates were similar in manufacture and for the same purpose. On December 25, 1895, the teeth, which had always been painful, became still more so. In addition they became longer by being forced out of

their sockets; the irregularity was much worse than it was before any treatment was begun. The girl refused to go to the institute any longer and the parents did not insist upon it. Nothing was done until March, when I was consulted.

After obtaining all particulars, and after a close examination, in conjunction with another dentist, we proposed to extract the two teeth in such a hopeless state and to supply the patient with four artificial substitutes. The operation was performed, the teeth being so loose that they could have been extracted without the aid of forceps. Our surprise was great when, as we were proceeding to syringe the alveolar cavities, we perceived in the right the end of an india-rubber ring. With the aid of a pair of tweezers and a little gentle traction we recovered it entire.

The inflammatory phenomena, periostitis, and the elongation of the teeth were thus explained. The india-rubber ring was the cause of all the evil. It had slipped off the hook to which it had been fixed, and encircling the right incisor had worked little by little up to the apex of the root. The inflammation had spread to the left incisor and had also involved it. The rest of our treatment was simple. The fungous patches on the gum were cauterized and three weeks after were quite healthy. A temporary plate carrying four teeth was supplied. The girl therefore has six superior incisors, but the lips meet again now, and to the ordinary observer the aspect of the teeth would not attract attention.—*British Journal Dental Science, September, 1896.*

HOW TO MAKE A SMALL FURNACE FOR BAKING PORCELAIN. By Wm. Rushton, L.D.S. Eng. First obtain from a woodturner a hollow cylinder of wood $4\frac{1}{2}$ inches long, inside diameter 3 inches, sides 3-16 inch thick, open at top, but having a bottom half-an-inch thick. Let this pattern be cast in iron, and let a round hole be drilled in the side, the center being $3\frac{1}{4}$ inches from the bottom, and another hole be drilled through the middle of the bottom. The hole in the side should be 1 inch in diameter, and is for the mouth of the muffle; the hole through the bottom is to admit the nozzle of a Fletcher's injector blowpipe. Let the nozzle of the blowpipe be tapped for about $\frac{3}{4}$ -inch down and let the bottom hole of the furnace be threaded so as to allow the blowpipe to be screwed into it. Let the leg of the blowpipe nearest the nozzle be filed off. Next obtain

one of Morgan's plumbago crucibles, 3 inches high and $2\frac{1}{2}$ -inch diameter. With the sharp end of a riveting hammer chip a hole in the bottom of the crucible and with a file enlarge the hole to the diameter of the blowpipe. Next obtain a piece of platinum foil $3\frac{1}{2}$ by 3 inches, and of the thickness usually employed to cover roots in pivoting. Bend it in this fashion with the ends interlocked and hammer the ends closely down to prevent gassing. We now have a platinum muffle $3\frac{1}{2}$ inches long with a flat bottom 7-8 inch wide, dome-shaped top and open at both ends. At one end make a few cuts with scissors into the dome-shaped part to allow of the end being closed by bending the platinum down at right angles. Now place the crucible in the furnace and file it down where the muffle goes, until by passing the muffle through the hole in the side of the furnace it rests on the crucible on a level with middle of the hole. Now sink the crucible in the bottom of the furnace with sand and plaster, taking care to keep the hole at the bottom free. Then mix some fresh sand and plaster, and plaster it round the ends of the muffle now placed in position, taking care to imbed the far end in the investment. Build the investment up somewhat dome-shaped, allowing $\frac{3}{4}$ -inch between the investment and the muffle on each side, and having about $1\frac{1}{4}$ -inch aperture above. Let the part of the muffle that projects from the hole in the side be turned down flush. Make a tray with another small piece of platinum foil. A door for the muffle can be made with a little sand and plaster or fire-clay. This furnace is large enough for four teeth or a small bridge. With a hole drilled in the bench for the blowpipe to pass through, the furnace can be put together at will and kept out of the way when not wanted. The blowpipe can be used for melting gold or other purposes of the workshop. A second plumbago crucible with a half-inch hole knocked in the bottom and used as a funnel after the furnace is lighted, is an improvement. I am told that asbestos and plaster are better than sand and plaster, and also that fire-clay four parts by bulk to one of sawdust, and made into a paste with silicate of soda (liquid silex), is better still. The total cost, exclusive of the foot-blower, should be under \$10, the chief expense being the platinum.—*British Journal Dental Science*, September, 1896.

COCAIN A SPECIFIC FOR NAUSEA. Dr. C. W. Ingraham (Am. Med.-Surg. Bul.) discovered accidentally about a year ago that

the application of a 2 per cent solution of cocain to the mucous membranes of the nostrils will almost instantly, in the majority of cases, relieve nausea, and his experience since that time shows it to be a very reliable remedy, if not a specific for this distressing and often serious symptom. The efficacy of this treatment is easily explained on a strictly physiological basis. That there is a distinct nervous association between the olfactory nerves and the nerves of the gastric mucous membranes is repeatedly demonstrated to the everyday observer. Repulsive odors inhaled are oftentimes reflected to the stomach, causing a sensation of nausea, which is usually relieved as soon as the exciting cause is removed. In naso-pharyngeal catarrh the secretions and accumulations cause much retching and frequently vomiting when the passages are "cleared out." As a third instance of the close reflex association may be mentioned the observations of a certain surgeon, who claims that applications of cocain to the nasal membranes just previous to and during anesthesia will relieve the patient of many unpleasant accompanying and after-effects, particularly gastric disturbances. A fourth instance, though not always present, may be mentioned—the tendency to digestive disturbance during attacks of hay fever or hay asthma.

However we may attempt to explain this positive relief of nausea following local anesthesia of the nasal membranes, the clinical fact that it does prevent and relieve the condition is sufficient evidence for its employment. As in the use of cocain for the relief of other painful or annoying conditions, great care should be exercised to protect against the well-known danger of idiosyncrasy, as well as to protect against subjects acquiring the habit, particularly if its use were to be long continued. It would be advisable, where the use of the remedy is to be often repeated, for the physician to personally administer the applications a few times, to become assured of its results and to observe any idiosyncrasies, as well as to instruct the patient as to how much and how to use it. It would also be advisable for the physician not to inform the patient of the nature of the remedy, other than that it is a poison and must be used with great care. He believes the results that may be obtained from the use of cocain for the relief of nausea will prove of more than ordinary value in the treatment of obstinate vomiting of pregnancy, and may even be of more value in those morbid conditions of the stomach in which vomiting is not only constantly threatened, but in which

vomiting does great harm. Doubtless the strength of the solution will have to be varied to meet the requirements of individual cases, but for ordinary cases he has found a 2 per cent solution to have the desired effect. The effect usually lasts several hours.

For the reason that the filaments of the olfactory nerves are distributed principally in the mucous membranes covering the upper third of the septum of the nose, the superior turbinated, the upper third of the middle turbinated, and the upper part of the nasal cavities beneath the cribiform plates and ethmoid bone, it is advisable that the applications of cocain be forced well up into the nasal passages. If applied only over the lower part of the membranes, or the "breathing portion," which is not connected with the sense of smell, it is doubtful if any effect would follow. The accessory cavities or sinuses communicating with the nostrils are not all associated with the sense of smell. Therefore, if the cocain spray is forced well up into the nasal passages, effecting complete anesthesia of that portion of the mucous membranes governing the sense of smell, complete or more or less lasting relief of a prevailing attack of nausea may be expected to follow in nine cases out of ten.—*Medical Standard, September, 1896.*

MECHANICAL FACTOR IN THE ERUPTION OF TEETH HITHERTO UNRECOGNIZED. Read by Mr. T. E. Constant, M.R.C.S., L.R.C.P., L.D.S. Eng., before the British Dental Association, August 14, 1896. Briefly stated, the author's idea was that the pressure of the blood on the vessels under the teeth was the cause of the teeth moving into place.

Mr. C. S. Tomes thought the idea a very possible one, and it had certainly been overlooked, but the circumstances under which it occurred were perhaps a little more complex than might be supposed from Mr. Constant's presentment of it. Blood pressure was equally distributed in all directions so long as the tooth was surrounded by vascular tissue, and an erupting tooth before it got clear of the gum had blood pressure in front as well as behind. It was, perhaps, the author's idea that in the tissues in advance of the tooth, in the gum for instance, the blood pressure was kept in hand by the walls of the vessels, whereas in the tissue which he had often emphasized as gelatinous, and the tissue which was underneath it, the blood vessels had possibly less muscular tissue of their own walls, and so

the blood pressure was bottled up in comparatively rigid tubes and let loose to act on the so-called gelatinous tissue underneath the tubes. He did not know whether that was Mr. Constant's idea, but there was something necessary to enable them to form any idea of a blood pressure under a tooth overcoming a blood pressure above. As Mr. Constant drew his diagram, it seemed to suggest that the arrangement was, with a good many exceptions, like the arrangement of a hydraulic press in which there was one little tube containing water, the pressure expanding out into a big chamber, and the same pressure existing over the whole area, so that the effective force was much greater. But he was not in a position to discuss the question at a moment's notice.

Mr. Constant, in reply, said that Mr. Tome's suggestion had occurred to him as a very strong objection; but in the jaws that he had examined he had been struck by the great difference between the surroundings of the tissue overlying the tooth and that underlying it. He had been speaking of the purely mechanical aspect of the eruption. He was aware that while the root was going up there was a physiological process going on, and also another process, of which little was known, which was removing the superimposed tissue, so that it was only necessary to have a slight force constantly acting from below to cause the very slow gradual eruption that took place. The intermittent pressure given by the blood was highly favorable to such eruptions. If there was any insuperable objection to the idea he should be glad to know it, as he did not wish to perpetuate a fallacy.—*Dental Record, September, 1896.*

INCISIVE CONTOUR RESTORATION. By R. D. McBride, D.D.S., Detroit. One of the most perplexing cases that presents itself to the dentist is the restoration of the contour of the incisors where some constitutional malady, during the formation of the teeth, has caused a retarded development of the incisive portion.

As for the preservation and durability, gold is unquestionably the most superior material we have at our command for restoring the contour of the anterior teeth thus affected, but from an esthetic standpoint it is objectionable, for invariably it results in a disfigurement. However, this is modified by sex. Where we would not hesitate to place gold in the mouth of a man whose mustache causes an inconspicuousness of the teeth, we would extremely regret to mar

the appearance of a beautiful young lady by performing such an operation.

Porcelain has proven a failure, even in the hands of those who are most skilled in its manipulation, and to-day is nearly discarded. The great difficulty is its deficiency in strength and inaccuracy in adaptability. Owing to the shrinkage of porcelain during the fusing process and the liability of fracturing the edge in removing the platinum matrix, it is impossible to complete the contour of an incisor without a perceptible line of demarcation, and consequently it is a matter of but a short time when the cement is washed out and the ravages of decay are observed.

Frequently extreme cases demand the removal of the natural crown and the adjustment of an artificial substitute; but, unless a jacket crown is used, this is limited by the age of the patient. During youth it is essential to preserve the vitality of the tooth that the process of calcification may be completed.

When such an operation is deemed advisable, the following method has proved satisfactory in the hands of the writer: The anomalous formation of the individual teeth is ground off, finishing with a flat file. A set of Logan crowns, the proper form and color, are selected, and the pin portion is removed sufficiently so that the remaining incisive portion exactly completes the natural contour of the teeth, the final grinding being done on the side of the wheel, thus producing a most perfect union between the tooth and porcelain tip. Two anchor screws are placed in each tooth on either side of the pulp and two small holes are drilled in the porcelain with a diamond drill for the reception of the extended portion of the anchor screws. When the porcelain tips are cemented in place, the line of demarcation is wholly obliterated and the operation presents a clever deception.—*Ohio Dental Journal, September, 1896.*

LINING ROOT-CANALS. By L. P. Bethel, D.D.S., M.D., Kent, Ohio. Read at American Dental Association at Saratoga, August, 1896. In the treatment of teeth with devitalized pulps, a medicament that not only sterilizes the contents of the root-canal, but leaves behind an antiseptic deposit which prevents the subsequent development of micro-organisms, would be an ideal disinfectant. With this thought in mind I began a series of experiments, some months ago, taking nitrate of silver for the first agent.

We know how useful this salt has been in the treatment of certain superficial cavities in the teeth of adults and various cavities in the teeth of children, preventing decay as long as the discoloration remains. If in this location, where it is exposed to the varying conditions of the oral fluids, it will prevent subsequent decay for a considerable time, why should it not remain unchanged for a much longer period when sealed within a root-canal and remain, perhaps, as a permanent barrier to the development of germs?

Repeated attempts at pumping it into the canal by means of wooden points, broaches, etc., proved unsatisfactory, for the silver nitrate solution would not go beyond the point of penetration of the broach, and the cases most desired to treat were small, branching, or tortuous canals, where it was impossible to pass even a broach. By the aid of cataphoresis, however, the silver nitrate was forced beyond where the broach extended, into small canals, etc., as these specimens show. Microscopic examination shows that the nitrate of silver is forced, by means of cataphoresis, to a greater depth into the tubuli of the dentine, more thoroughly sealing them than when applied to the surface by ordinary mechanical means.

In the preliminary experiments out of the mouth the silver nitrate was used in connection with various agents, such as sulphate of soda, 1% H_2SO_4 , etc., but the silver nitrate being itself a good conductor of electricity it was found more satisfactory when used alone in an aqueous solution, made from distilled water to avoid all organic material. Various strengths were employed, from 10% to a saturated solution, those giving the best results being from 40 per cent to 75 per cent solution.

The process of application is a simple one. Adjust the rubber-dam, and if the crown of the tooth needs protection from discoloration, apply a thin coating of melted wax to the interior surface. Next apply the silver nitrate solution to the canal by means of a wooden toothpick or other suitably shaped piece of wood, pump it downward into the canal as thoroughly as possible, place electrode into pulp-canal opening, then a pellet of cotton, saturated with the nitrate solution, around electrode at the orifice of the canal and the electricity does the rest.

The electric current turns the cotton first a light green color, which grows darker until almost black, and serves as an indicator. The time of application will vary according to the condition of the

root-canal, whether well opened, its size, strength of current and per cent solution of the silver nitrate. The higher per cent solution the better conductor it makes and the quicker it is deposited. From one to five minutes seems to be ample time. After removing the electrode, cleanse the pulp cavity and canals as well as possible with dilute ammonia to neutralize the nitric acid set free, and also to hasten the darkening of the nitrate of silver.

In the majority of practical cases I have been using the nitrate after the root-canal has been sterilized, although in several cases it was used without previous sterilization, the cavity sealed and no after-trouble experienced.

This root-canal lining is not advocated for all teeth; indeed, the practitioner must use judgment in its application. It would not be advisable in the anterior teeth on account of discoloration, or teeth where the foramen is large, such as teeth not fully developed and others, on account of forcing it through the apex of root. Just what would result from such an accident I am unable to state from practical experience. I have tried to force the solution through the apex of a normal root, out of the mouth, but in every instance it has penetrated just through the foramen and stopped, due possibly to forming an albuminate when coming in contact with tissues at the end of the root and thus limiting its own action.

The object of these experiments is to find a means of treating root-canals that are too small to admit a broach, those branching or tortuous, those in flat-rooted teeth, etc., where it is doubtful about inserting a protecting root-filling. If such root-canals are thoroughly lined with the nitrate solution and it penetrates somewhat into the tubuli, as it does, the probability is that there will be no subsequent trouble, even though the root-filling should be defective. And, indeed, it is a question if root filling would be necessary at all, especially in small canals.

Roots treated by this process out of the mouth, when filed, reveal the outlines of the canals, their restrictions, obstructions and unlooked-for branches that probably would not be found in ordinary root treatment and filling, and would be left perhaps, as a harbor for bacteria to multiply in and cause subsequent trouble.

Discussion:—Dr. Abbott, New York, said that cataphoresis takes too much time. He uses chlorid of zinc and fills with oxychlorid. He thought the silver nitrate would permeate the

tubules and become a source of danger to the cementum and pericementum.

Dr. L. L. Barber, Toledo, O., said that this treatment had proved satisfactory to him where other means had failed. He cited a case of a lower third molar, abscessed, that had resisted repeated attempts at treatment with various disinfectants, the tooth becoming painful after the dressings had been sealed in. One application of silver nitrate solution cataphoretically, as advocated in the paper, was used, the cavity sealed, and no inconvenience to the patient has been experienced since the operation.

Dr. Ambler, Cleveland, said that while he was experimenting with nitrate under amalgam fillings, Dr. Bethel suggested its use for root-canals and together they made some preliminary experiments. He had since operated on cases in the mouth and no trouble has been experienced. He does not operate on roots having a large foramen, but where the canals are small and it is almost impossible to pass a broach. Cataphoresis drives the medicament deeper into the tubules than when locally applied and this is an advantage. In the root-canal operated on with nitrate of silver you have an insoluble compound sealing the tubules and which cannot be penetrated by anything from outside. It is not intended for teeth of children or where the foramen is large. It is not claimed that the use of silver nitrate is new but this particular application of it certainly is. He has used it also with good results under amalgam fillings. There can be no subsequent decay as long as the dark deposit remains.

Dr. B. Holly Smith, Baltimore, asked how it was that the current of electricity would carry the nitrate along a tortuous canal.

Dr. Joseph Head, Philadelphia, said that as the canal was much larger than the tubules, it contained a greater amount of moisture, and was therefore a better conductor of the electricity which would flow in the line of least resistance.

Dr. James Truman, Philadelphia, said that nitrate of silver being a strong antiseptic would prevent the development of germs, but it would discolor the tooth substance. It would be carried into the tubules by osmosis and where would its limitations be, in the pulp cavity or in the cementum? He had applied nitrate of silver to tooth substance and found that it penetrated into the tubules. He preferred to use a medicament that would not discolor and recommended chlorid of zinc. Its application should not be by cataphore-

sis, however, for that would drive it through the tubules and would be apt to prove dangerous to the cementum or pericementum.

Dr. M. L. Rhein, New York, thinks that if an escharotic should be used that zinc chlorid offers superior advantages. We should use cataphoresis carefully, for the electric current reduces the medicaments to their nascent state.

Dr. J. Taft, Cincinnati, thought that the gentleman had an exaggerated view of the coloration of silver nitrate. In solution it is a colorless liquid. When applied no coloration is observed, but after a few moments it discolours. Nitric acid is set free and combines to a limited extent with the lime salts of the tooth. The silver is precipitated on the surface and not in the tubules as an oxid, which becomes inert as soon as its action is limited. The idea of possible discoloration should not stand in the way at all.

Dr. A. W. Harlan, Chicago, said that he made many experiments with teeth set in wax and plaster, and in the jaw itself, to test the penetrability of coagulating agents. A solution of silver nitrate will not penetrate the tubules to any appreciable extent; certainly not enough to cause discoloration of the tooth. The specimens passed around show that the oxid does not reach the cementum. He said he had a number of teeth imbedded, in which he had sealed nitrate of silver solution in 1894, but which he had not yet opened. He had any number of teeth in which the essential oils had been sealed. His experiments in this line have been very extended, and he knew what he was talking about. Chlorid of zinc, as soon as satisfied with water, stops its action. You cannot drive nitrate of silver through the apex of a normal root, for when it comes in contact with the tissues at the end of the root it forms a coagulate and limits its own action. You will not get a permanent discoloration of the dentine with silver nitrate solution, for, on account of its coagulating properties, its action is limited. He was glad that Dr. Bethel and other Ohio men were experimenting in this direction.

Dr. H. L. Ambler, Cleveland, said nitrate of silver had been often used for superficial decay and to prevent further erosion by applying it to the affected surface of the tooth. He had found that when applied to an eroded surface by means of a minute piece of cotton, saturated with the solution and the cataphoric current used, it penetrates deeper into the dentine and the effects are more last-

ing. Silver nitrate is superior to other agents, for it makes an insoluble compound with the albumen of the tissues. In root-canals, just so far as the dentine is moistened with the nitrate, you get the discoloration. He had experimented on pulps of freshly extracted teeth, and by means of the nitrate used cataphorically they were thoroughly destroyed. It might prove an efficient means of devitalizing pulps.—*Ohio Dental Journal, September, 1896.*

BRISK RUBBING VS. GINGERLY TREATMENT OF THE GUMS. By Dr. T. E. Lee, Washington, D. C. After citing two cases in which there was evidence of pyorrhea, and which were cured and the gums healed by vigorous, frequent brushing, he says: These are only two cases of many where brisk rubbing proved to be of inestimable value. I have in my mouth a lower incisor, the gum of which in early life receded considerably, retreating before the progressive accumulation of tartar. If for two or three days I fail to bring my brush well down on this place in cleaning my teeth, the gum surrounding the vacant place on the labial aspect of the neck and root becomes soft, loose, swollen, red and tender, with a strong tendency to increased recession. When this state of affairs is discovered, I take the brush and give the place a brisk rubbing regardless of the small amount of pain and some bleeding. Within a few hours the gum feels and appears well, and the recession is not nearly so marked.

My deductions: 1st. That the proper circulation of pure blood in the gums (as in other parts of the body) is necessary to maintain their health and vigor; 2d. That sufficient exercise is needed to secure good circulation; 3d. That gently rubbing the gums up and down is not adequate, but that brisk treatment with a brush of medium stiffness is required to secure sufficient exercise and remove all mucous secretions. More people rust out than wear out; so more gums rust away from lack of exercise and from poisonous accumulations lodging within their free margins than wear out from too much or too severe brushing. These accumulations, be it remembered, are not composed entirely of soft food. They have a considerable proportion of serous exudate, which, like most exudations, becomes foul and poisonous after long exposure to the air. The results of these deposits are always disastrous to both teeth and gums. Erosion of the necks of the teeth is mainly chargeable to

their account. The soft, loosened condition of the gum margins is certainly to be credited to them. Nature, in all her phases, is opposed to unclean things. Ordinary wear and tear is never so bad as the rust of neglect. In my ten years of dental experience I have never seen any explanation of the causes of serumal deposits under the gums other than those attributed to conditions of the blood, etc., that is, superabundance of inorganic substances. In my opinion, it is more clearly traceable to these soft accumulations, together with salivary calculus, acting as a dam at the necks of the teeth, preventing the escape into the mouth of the serumal exudate. This, finding no means of egress, decomposes; its inorganic properties being deposited on the teeth as serumal calculus, its organic constituents become the pus of pyorrhea alveolaris.

I have frequently had patients suffering from pyorrhea mildly or severely. Though almost always of a chronic nature, it is generally accompanied by quite an amount of tartar. I invariably remove as thoroughly as possible all traces of tartar, wash out the pockets with "peroxid," then with warm water and carbolic acid. Most do well under this treatment, though occasionally a patient will return after a few days, suffering intensely from an acute sub-marginal abscess, which, after lancing and washing out, usually disappears permanently. I attribute the forming of the abscess to the fact that after the removal of the tartar, the teeth having been well cleaned, the gums at the margin shrink back proximately to the normal positions they occupied prior to the formation of tartar. And in the act of shrinking they imprison some of the poisonous germs of the diseased condition, which, having no means of escape, produce abscess. Riggs' disease is so distinctly and rapidly progressive in some cases, because of the very facts I cite, and because the deposits at the necks of the teeth make the gum-margins so soft and tender that the use of a toothbrush is extremely painful. The result is that they are never properly cleaned until they come into the dentist's hands. Meanwhile the ravages are steadily going on.—*Welch's Monthly, September, 1896.*

PYORRHEA — A CRITICISM. By B. F. Arrington, M. D., D.D.S., Goldsboro, N. C. In the July issue of the *Dental Cosmos* is recorded a paper from Dr. S. W. Foster, of Atlanta. The paper is of real merit and interest, contains statements and presents facts worthy

of careful consideration, and should be treasured and kept for reference; but on page 570, seventh paragraph, the doctor takes, I think, a false position in relation to cause and effect, and if his position, as stated, is accepted as orthodox, it will lead astray the uninformed and those who are deficient in practical experience.

The paragraph reads as follows: "It is rarely that we see a consumptive in whom we do not find a typical case of pyorrhea, or, at least, pus discharging from around the necks of the teeth, and it seems that the breathing into the lungs the effluvia from those suppurating sinuses of the mouth might produce this fatal disease."

Now, the question arises, and the point I make is this: That with consumptives we do not find typical cases of pyorrhea more frequently than among any other class of patients. In some cases we do find the teeth and gums seriously neglected, as with other types of disease, or when there is not disease, and all that is requisite for a normal state of teeth and gums is the free use of the toothbrush.

Consumptives, as well as persons suffering from any other malady, are liable to be troubled with pyorrhea, but never as the production of tuberculosis. The "pus exuding from around the necks of the teeth" is often seen in the mouths of consumptives, and more frequently with young than old persons, and mostly around the lower molars. It is a feature (not universal) in tuberculosis, and has no connection or dependence whatever upon pyorrhea. The margin of the gum is seldom ever affected, and the pus is clear and unadulterated, never mixed with blood as in pyorrhea.

Pyorrhea treatment will not (cannot) check the formation and discharge of pus in a case of tuberculosis as it does in pyorrhea. Pyorrhea is a disagreeable, and often, when far advanced, a loathsome and offensive disease, and sometimes very injurious to health, but cannot produce, and never is the cause of, consumption.

In the discussion following page 572, first paragraph, Dr. F. P. Gale, of Atlanta, is quoted as saying: "Another case of a woman who had been confined to her bed for several years suffering with symptoms of general debility, and was apparently almost a dying woman when he was called to examine her mouth. He found all the teeth affected with pyorrhea; removed all, and made her a full upper and lower set. The result was, the poisonous pus being no longer taken into her system and the ability to masticate food restored her, she regained her health and strength entirely."

Questionable practice. Was such a procedure admissible, and did it accord with professional progress and advance in dental practice? Would it not have been wiser and better practice, and more abreast with the times, to have treated for the cure of pyorrhea, checked the pus discharge, restored the gums to a normal state, and preserved the natural teeth firm in their sockets, rather than have extracted all and replaced them with artificial teeth? Unquestionably the effort should have been made. Extracting "all the teeth" should be the last resort in the treatment for relief and cure of pyorrhea. The idea advanced by some dentists, that nothing short of extracting the teeth will cure pyorrhea, is a weak theory and is doing harm. Such an idea should be silenced and universally repudiated.

On the same page (572) Dr. E. S. Talbot, of Chicago, says: "In many cases the low state which favors consumption is caused by pyorrhea and other troubles in the mouth. He has one patient who has tuberculosis, who comes to him two or three times a year to have pyorrhea treated. The effect is always to build up his strength for the time, but the condition returns."

Something wrong here—diagnosis, possibly, in fault. Let us reason together and see if there is any sustaining good reason for presuming that pyorrhea has any tendency to produce or in any way aggravate or speed the progress of consumption. In the first place, we know that inflammation of the soft tissues in most extreme typical cases of pyorrhea does not spread and tend backward and downward to fauces and trachea, as inflammation from other causes does, but is strictly confined to narrow limits (the gums), seldom ever advances more than a few lines from the gingival border, and but very seldom is there acute sensation from pyorrheal inflammation, especially after the disease has advanced to the suppurating stage. These are facts non-controvertible, therefore there can be no injury to lung substance from pyorrheal inflammation.

As regards the pus discharge and the passage of it into the stomach, it may (very probably does), to some extent, impair digestion and affect the general tone of health, but how it is possible to tend specially unfavorable to the lungs and cause or increase tuberculosis, is something I cannot comprehend. If the pus production in a typical case of pyorrhea is so weakening and hurtful to the lungs, what of the effects of an extreme case of catarrh in the head? We

frequently see delicate, feebly constituted persons (male and female) subjects of catarrh for years, and no signs of consumption. The pus generated, abnormal secretions and unwholesome effluvia emanating from such a source must be more hurtful and disease-producing than from pyorrhea. It is not always a "low state" that favors consumption, except through heredity. I have known the best constituted and most robust men to be stricken down from outdoor exposure, and die with consumption in less than six months. Then I have known men of feeble constitutions, all the while on the decline, seemingly consumptive, yet they linger for years and die of some other disease. I have known men and women of frail constitutions to suffer for years (twenty or thirty) with pyorrhea, blood and pus all the while discharging, gums festooned and entirely separated from the teeth, alveolar process wasting, teeth loosened and dropping out, without the slightest trace of lung trouble and the digestion not impaired in the slightest degree, and have witnessed corresponding cases with persons of robust constitutions.

The patient (consumptive) whom the doctor treats several times a year for pyorrhea, and always with temporary relief, is undoubtedly a case of genuine tuberculosis, and there is discharge of pus around the teeth, as the doctor represents; but it cannot be from pyorrheal cause, for there never is pyorrheal pus discharge unless there are deposits on the roots of the teeth. If the deposits are successfully dislodged and removed, followed with requisite treatment for cure, the reproductions cannot be so frequent. However, if it is a case of pyorrhea beyond question, then the presumption is that the doctor fails of thorough removal of the deposits, and fails to apply in sufficient strength a dissolvent and remedies to stimulate and tone up the soft tissues and establish a normal state of the peridental membrane. It is either not a case of pyorrhea or the treatment is out of line for cure.

Only through discussion, investigation and criticism can we come at facts and establish truth. Simple statements of cases in practice, and assertions as to cause and effect, treatment and results, are often profitable to us, but must not always be accepted as truly orthodox and not to be questioned. Cause and effect are factors, and *diagnosis* a potent factor that must lead and point practice.—*Southern Dental Journal and Luminary, September, 1896.*

FORMULA FOR ODONTALGIA. The following remedy for odontalgia pulpitis has been employed with good results by Dr. S. Wotjoff:

℞ Cocain hydrochlorate, 0.1
 Camphor, 5.
 Chloral hydrate, 5.

To this mixture add a few drops of water, thus producing a clear liquid. Saturate a pellet of cotton with the remedy and insert it in the aching tooth and permit it to remain about one day. If the pain still continues renew the treatment and the ache invariably ceases. The author has resorted to this drug in many severe cases and has met with exceedingly satisfactory results.—Translated by Dr. B. J. Cigrand from *Zahnärztliches Wochenblatt*, August, 1896.

CHLOROFORM AND ROOT-CANAL TREATMENT. Dr. Cohn, of Berlin, says: "The treatment of root-canals having putrescent contents is familiar to all, especially that relative to proper disinfection and necessary reaming. Notwithstanding the numerous remedies employed, a new medicament is in demand, since present treatments are not entirely satisfactory. I have of late made many experiments with chloroform and must say have effected grand results. The following three points I have observed as worthy of note: 1. That chloroform possesses powerful antiseptic properties and excels many drugs now employed in destroying bacteria. Further, it has the advantage of not coagulating albumen, and in consequence does not hinder, as does carbolic acid, a perfect antiseptic effect. 2. Chloroform, as is well known, softens fatty matter, and, as there is present in putrescent pulp considerable fatty substance, the chloroform will materially aid in softening the fatty contents, and in consequence be converted from a papescent to a liquid condition. I also learned that the canals were cleansed more readily by employing chloroform, and the dryness which results is an additional advantage in case the canal is to be immediately filled. 3. If you employ a pellet of cotton saturated with chloroform, and perfectly seal it in the root-canals, the vapors of chloroform will permeate to the farthest extremity of the root and thus perfectly antiseptize the canal. Sealing the chloroform in the pulp-chamber should not be done until you have first employed it in eliminating the putrescent pulp; its subsequent use is to assure thorough disin-

fection of the canal. In short, I administer the chloroform much after the same manner as we do carbolic acid, or any of the other generally employed agents."—Translated by Dr. B. J. Cigrand from *Zahnärztliches Wochenblatt*, September, 1896.

ALCOHOL AS AN ANTIDOTE TO CARBOLIC ACID. Recently a woman in an attempt at suicide drank over an ounce of carbolic acid in a tumbler of whisky. The immediate service of Dr. Fraser was secured, but he was completely at a loss as to the cause of the patient's ailment. The bottle containing the acid was found close at hand, however, and the doctor recognized in the patient's breath the carbolic odor, but what seemed to dumfound the physician was the fact that the mouth, lips and tongue were free from the escharotic effects of the drug. He immediately flooded the stomach and continued to rinse the same until he had liberated the acid vapors. The patient was soon resuscitated and eventually fully recovered. Since this experience Dr. Fraser has made many discoveries relative to carbolic acid antidotes, but the one fact which will interest the dental profession most is that in the event of the unfortunate circumstance of accidentally applying carbolic acid on a patient's lip or skin, he recommends bathing the burned surface with alcohol, whereupon immediate relief is rendered and the eschar readily disappears.—Translated by Dr. B. J. Cigrand from *Zahnärztliches Wochenblatt*, September, 1896.

APPARENT CASE OF SALIVATION. By C. W. Stainton, D.D.S., Buffalo, N. Y. The recent sickness and death of a neighbor seventy-five years old furnishes a case of interest from both a medical and a dental standpoint.

In the nearly score of years I have known her she has never been strong. Her appetite was very delicate, and but few things could be tolerated, and food in very limited quantity could be taken at once. During the latter part of the past winter she had not been as well as usual, and one of our brightest and most progressive medical men was called to attend her.

He found her entirely free from cardiac, kidney, or hepatic complications; she seemed to be suffering solely from lack of nutrition, and efforts were directed toward obviating this difficulty. A few days' trial seemed to show that progress in this direction was not

likely to be encouraging, from one-half to one teaspoonful of beef-tea being the limit. Any larger quantity caused considerable distress and was soon ejected. The secretion of saliva was abnormally large, and this constantly swallowed saliva was ejected toward the close of each day. After some time spent in unsatisfactory trial the physician in charge called in consultation a professional friend, who has made gastric troubles a more especial study than any one else in our city.

The attending physician had for some days entertained the suspicion that an old, red-rubber upper set of teeth, which had been worn for twenty-five years, might be the source of the trouble. The appearance of red, inflamed patches of the mucous membrane under that ill-fitting plate (a condition well understood by dentists as due more to mechanical irritations from ill-fitting, loose-shifting dentures than anything else) and the increased flow of saliva pointed in this direction.

The consulting physician coincided in this view. A suspicion was entertained by both that the pancreas was not performing its full duty. If this were true it would in part explain the conditions present. The set of teeth was removed from the patient's mouth and turned over to the professor of chemistry in the University of Buffalo. He took showings from the plate, applied the proper tests and found mercurial reaction. The suspicion that mercurial salivation was the chief trouble now seemed proved. Death of the patient subsequently occurred.

An autopsy revealed a stomach very much reduced in size, as though a surgical operation had removed all the depending portion, so that its appearance resembled a section of the large intestine. This may offer an explanation of the small quantity of food tolerated at one time and also the periodical rejection of the swallowed saliva. The liver was reduced in size considerably, but was secreting bile; the duct, very small, was open and bile found in it as well as in the duodenum. The gall-bladder was full of gall-stones. The pancreas, like all the viscera, was much reduced in size, its structure considerably changed, the connective tissue unusually abundant and the pancreatic duct *entirely closed*. No pancreatic juice could have been poured into the duodenum for a long time past. This discovery put a new face on the matter. It was easy now to understand the increased flow of saliva. One of the digestive glands being

practically obliterated, a vicarious effort had been made on the part of others to make good the loss.

See what proofs—strong as holy writ, in the hands of some theorists—we have here to prove a case of salivation from wearing a red-rubber plate. 1. The sore patches of mucous membrane. 2. The incessant flow of saliva. 3. The gradual wasting away of the patient. 4. The mercurial test.

The attending physician reported to me that the chemist found free mercury. This was an error. The test was a very delicate one for any preparations or forms of mercury. No free mercury was found.

It is a matter of regret that since the days of Wildman nothing has been added to our literature on rubber and its composition. Some careful, patient, chemical, microscopical student has a large and important field awaiting him in this direction.

[Investigation of this question was very exhaustively made by the Pennsylvania Association of Dental Surgeons of Philadelphia about twenty-five years ago. That society appointed a committee, consisting of Drs. Wildman, Buckingham and Truman, to examine into the subject. The mechanical, chemical and microscopical were given to each in the order named. The report, in substance, demonstrated that the amount of free mercury present in vulcanized plates was infinitesimal, and on the polished surfaces nothing could be found. The writer of this, in numerous sections examined, found in two or three instances exceedingly minute globules under high powers of the microscope; but so thoroughly imbedded were these in the impervious rubber that the possibility of causing local disturbance could not be entertained.

The cause of mucous irritation is no doubt due to uncleanness on the part of patients and the presence of micro-organisms on the plate, as shown by Dr. Black. The fact that a daily antiseptic wash prevents this irritation demonstrates very clearly the cause, and that it has nothing to do with free mercury supposed to be in the coloring substance (vermilion) of the rubber. *Ed. International.*]—*International Dental Journal*, September, 1896.

CONCERNING VULCANITE. By Dr. C. A. Allen, Buffalo, N. Y. Read before the Second District Dental Society of New York State, March 11, 1895. The physical changes which vulcanite undergoes during the process of its becoming a solid body are, I

think, little understood. At any rate, the remedy for many of the evils of unscientific treatment is too rarely employed.

To begin with, let us briefly consider the elementary character of this body. The gum as it comes to the manufacturer is purely a vegetable compound, a hydrocarbon, made up of $H_{16} C_7$ (however, upon these proportions authorities differ, but not to the injury of our argument). Sulfid of mercury, which renders the body of use in our art, is now added in the proportion of one to two of rubber. We now have a compound which, when properly treated, produces a uniformly dense and sufficiently strong base for our purposes.

Some of our high attenuationist friends of "little pill" fame boldly declare red vulcanite plates to be the origin of all obscure physiological derangements, charging, as they do, that the coloring pigment is red oxid of mercury, which is highly irritating to mucous tissue. The absurdity of this charge is clearly manifest when it is stated, as a matter of fact, that our coloring pigment is simply sulfid of mercury. This preparation possesses no toxic or even disturbing physiological effects whatever, and may be brought into mucous contact with impunity.

Experimentation by thorough processes, aided by the most delicate instruments, has demonstrated that the quantity of mercury which it is possible to evaporate from a vulcanite plate before actually destroying the body itself is only infinitesimally small. Remember that in order to have even this slight manifestation of the "enemy's" presence a high degree of heat must be attained, a condition which could not be sanely looked for in the human mouth.

In the process of vulcanization it is readily conceded that we first have fusion of the component parts of the body under treatment, which occurs at certain definite temperatures.

What are these points of fusion? Any work on chemistry will place you right on the melting point of the sulfur in the mercury compound—and that will be 237 deg. + F. As to the melting point of the hydrocarbon compound (rubber), elaborate experiments by Dr. A. P. Southwick prove, beyond the possibility of controversy, that this will be at 248 deg. F.

Now, with the component parts of our body all fused, we may naturally expect the commencement of that remarkable and little understood physical change in the compound which we term vulcanization. That this change does begin at once upon the fusion of

the compound's ingredients, and that vulcanization as *we* understand it may be fully completed without the addition of a single increment of heat, is easily demonstrated. All that possibly could be required in addition to the present conditions would be a continuation of the 248 to 250 deg. F. over a longer period of time. If doubt exists in the mind of any one present as to the truth of this statement, let me suggest to him that he can easily obtain a 'lazy man's proof' of it by asking any manufacturer of rubber garments how he treats the articles as to temperature, time, etc.

Continuing in my quotations of the authority mentioned, I fearlessly make the statement that the actual destruction of vulcanite begins at 300 deg. F. and continues in proportion as the temperature is raised to 600 deg. F., where rubber will be entirely dissipated, the sulfur being affected in the same manner at 824 deg. F.

Now a word in regard to vulcanizers and their use. It should always be borne in mind that the degree of heat indicated by the mercury bath thermometer *never* registers the degree of heat corresponding to that of the inside of the vulcanizing pot where the case is being treated. The figures for this statement are as follows: If the stratum of atmosphere inclosed in the pot above the water line (when the cap is adjusted) is not expelled upon a degree of heat sufficient to generate steam being reached, we can always confidently rely upon our thermometer registering from 15 deg. to 18 deg. F., according to the amount of water, below that actually existing within the chamber. Not only this, but we must always be prepared to take into account a considerable loss of registering power of the thermometer through the radiation of heat, the convection of air currents, temperature of room, etc. To these influences you can always safely charge a loss of registering power of the thermometer of at least 15 deg. F., and usually more, often 20 deg. F. If these figures can stand verification, and I declare that they can, what will be the result? Simply this: the man who does not expel the atmosphere from the pot really subjects his case to at least 30 deg. F. of temperature more than that indicated by the thermometer. If he does expel the atmosphere he still has 15 deg. F. more than that registered. From this point our deductions are easy. We have declared that the destruction of vulcanite begins at 300 deg. F. actual. As an illustration of this point, let us imagine a case being treated at the old-fashioned 320 deg. F. without regard-

ing these two influences. The result is easy. Instead of 320 deg. F. we have at least 350 deg. F. If the stratum of atmosphere is expelled we still have 335 deg. F. to which our case is being subjected. If these figures and those preceding them are correct, we find ourselves treating vulcanite anywhere from 50 deg. F. down to 35 deg. F. above where the destruction of the compound actually begins. We are now asked what will be the manifestations of this unscientific treatment of the most abused and least understood body in the dental world. Every child in the land associates with rubber the property of elasticity, and that to the degree of exceeding in this respect any other body known to him. Do the high-temperature plates retain this characteristic? By no means; on the contrary, they have entirely lost it. Why? Because the extreme temperature to which they have been subjected has destroyed this natural inherent characteristic.

The early workers of vulcanite will tell you to-day that we cannot produce a plate which can be constricted at the heels, as they "used to do," and thereupon see it return to its former relations. The reason for this is obvious. The pioneers in vulcanite were instructed to vulcanize at a low temperature, about 280 deg. F. Besides this the machines placed upon the market at that date were so constructed that the heat was carried up and redirected upon the pot, thereby losing but little by the convection of air currents and radiation. If this be true, we now have to account only for the loss of the registering power of the thermometer by virtue of the stratum of air left in the pot. We have stated this in degrees to be equal to from 15 to 20 deg. F. This reasoning will easily solve the true degree of heat to which the case was subjected, and at the same time demonstrate why that property of elasticity was not lost in the work of the vulcanite pioneers. The next manifest injury to the base for our purposes will be in its extreme contraction. It should be borne in mind that vulcanite is affected by thermal changes more than any other solid body. Its rate of expansion in ordinary temperatures is somewhat over six times that of iron, about five times that of brass, and nearly four times that of zinc. This extraordinary expansion upon the application of heat will conversely manifest itself by contraction when the opposite thermal condition is applied. How and where will this extreme contraction be manifest in dental plates? If your case be of the stupidly contrived "gum sections" it

can express itself only at one point, namely, by a contraction at the "heels," and a consequent raising of the body from contact with the model, most manifest at the posterior part, but really extending itself well anteriorly. How can this be demonstrated? There is but one way. Preserve your model after vulcanization, and restore the plate to it, when the extreme degree of contraction will be only too manifest. The base will have no manner of contact at its posterior part with the model upon which it was vulcanized. This contraction, in case of the use of "gum sections" with properly ground joints, must necessarily be at the rear, as the arch cannot be crushed. In the use of "plain teeth" the contraction is diffused throughout the entire plate, and consequently does not appear so prominently at the point mentioned.

The question may be asked, "How can the model be preserved?" This is perfectly easy. As soon as the temperature is reduced to the proper point, open the flask, remove the denture from the model, and at once place the model over a gentle heat for a time sufficient to expel all moisture. Another result of excessive temperature in vulcanization, and the inevitable contraction in the molecular rearrangement which will follow, may manifest in cracked sections or "chipped" joints. Still another condition may present the case with one or more "spongy" points, usually to be expected at the thickest part of the body. The writer's deductions from the foregoing are that all bodies of vulcanite treated at a temperature above 300 deg. F. (actual) will show: 1. Destruction, increasing proportionately with temperature elevation, and loss of elasticity. 2. Extreme contraction, resulting in the plate having no membraneous contact across the posterior part. 3. Broken or cracked sections, or "slivered" at joints. 4. Sponginess of vulcanite at thickest portions, which may be manifest over a considerable surface, or may appear only at certain points in size and shape quite like a split pea.

Remedy.—Any or all the foregoing results may be obviated by maintaining a temperature within the vulcanizing pot throughout the entire period which shall not exceed 300 deg. F.—*Dental Cosmos, September, 1896.*

GOLD FILLING, WITH SPECIAL POINTS FOR HAND-PRESSURE. By A. D. Barker, D.D.S., Grinnell, Iowa. Read before Iowa State Dental Society, May 6, 1896. The common gold

plugger may be defined as a piece of steel with the end cut off flat and grooved across both ways, or serrated. Whatever may be the size of this end or point, it is still a cross-cut flat surface.

To obtain the best results, the direction of all force applied to such an instrument must be at right angles to the plane of its surface. As an aid in this constant effort to bring the face of the plugger down square with the surface of the gold, we have the shanks bent so as to bring the faces at almost every conceivable angle to the handles. This multiplies the number of instruments beyond all reason. Besides, it is neither convenient nor possible to change instruments often enough to meet practically all the varying conditions of many cavities. Consequently we do the best we can with a more or less limited number of instruments, and are often filled with misgivings as to the adaptation of our gold. If one point does not suit, we try another, which is likely to be "equally successful." So I have suffered many things of many plugger points and was nothing bettered, but rather grew still more discontented.

In the meantime I was continually but vaguely longing to disregard the face of the plugger and to apply force to the gold, not in one direction only, but sidewise, cornerwise, and in any direction that occasion might require; to know that the gold was spreading right out against the walls of my retainers, or against the cavity-walls or margins anywhere.

About the first light that reached me on the subject came from Dr. Royce. He did much valuable work along this line, but his pluggers did not meet my requirements. I made my retainers mostly with round burs, and I wanted points that would make the gold fit them perfectly.

Finally a new view of the situation presented itself. After we have removed the decay and defined the margins in almost any tooth-cavity, what do we do? Simply take up the hand-piece with a bur of suitable size, and shape it so it will retain the gold. Now here is the point. If one straight instrument will shape the cavity, why should several crooked ones be required to fill it? Again, if the cavity is shaped with a round instrument—the bur—how can we expect to fill it perfectly with flat ones? After getting this far, obviously the query was: Why not fill the cavity with a plugger shaped exactly like the bur that shaped the cavity? With such a point the gold must of necessity fit the retainers. We can reach

anywhere with it that we can with the bur. The sides of it will carry the gold perfectly into any undercut made by the side of the bur. One instrument takes the place of several. And as to the adaptation of the gold, it is accomplished, as I believe, to a degree of perfection rarely before attainable.

I have here ten instruments for your inspection, which more than satisfy the conditions named. The foregoing account of the evolution of the idea is given that you may the better see why I produced them. As to the manner of their development into the present form, it is perhaps unnecessary to speak. All of them are double-enders, made so because one point often follows the other in the same place, and it is easier to change ends than to change instruments.

The character of the points may be indicated by saying that they are simply flat, round and ball burnishers, cut one way. This is true of all but two. One has both points smooth for final burnishing. The other has two flat burnishers, one being cut lengthwise and the other crosswise. Each of the others has a ball on one end and a plain, round-ended burnisher on the other, all cut one way. The points on each end are the same size. One is made without the ball to prevent the gold from curling around it when being carried into a deep cavity.

Of these eight, four have a slight curve in the shanks, the other four a full curve. Each shape has four sizes, marked by one, two, three and four lines around the handle, according as the points are respectively slightly under the size of Nos. $\frac{1}{2}$, 1, 2, and 3 round burs. All of these may be used with simply pressure, or with a steady rub lengthwise of the serrations. What satisfaction I have taken in rubbing the gold right down over the cervical and oral margins! I have never been able to convince myself that firm pressure with the hand was not the surest way to adapt gold to any surface. I do not think there is sufficient time on the instant of receiving a blow for the particles to slide past each other properly. As you know, gold spreads better under a round point than any other, and in the one-way serrations we have a series of wedges forcing it together. For filling the inclosed point of any tooth-cavity, I believe nothing can equal such points as these, after their use is learned. When the filling has become flat, or nearly so, any preferred method may be used.

Now we come to the most noticeable feature of the instruments,

the large handles, and another very important one, the short shanks. The latter bring one close to the work, and the former give a firm grip, without tiring the hand. Both are copied direct from Dr. Libby, and are most valuable, as is also the building up of gold by rubbing or burnishing, although I find it too difficult to use smooth burnishers, as he does.

While it is possible to fill any tooth-cavity that can be shaped with the straight hand-piece with these points in a straight handle, I find it usually more convenient to have a slight curve in the shank, and sometimes even the full curve. Those with the full curve are certainly all that are necessary for use after the right-angle hand-piece.

Unless you are entirely satisfied with present methods, I wish to be very emphatic in recommending not only these points, but the complete instruments, to your careful consideration. While no one should hesitate at any time to make use of any other plugger, if it seems desirable, I have found myself recurring less and less to old forms as I learned to use the new, and to appreciate the advantages of the principles involved.—*Dental Cosmos*, September, 1896.

STOMATITIS THE CAUSE OF VARIOUS THROAT DISEASES. By Isidore Lett, D.D.S., Philadelphia. It is more fully recognized every day that dentistry, although a science in itself, is an important branch of medicine, and that it is necessary for us to co-operate with general practitioners. In support of this assertion I have had several cases which I will describe.

I have noticed repeatedly when a patient has acute stomatitis that the throat will invariably remain unaffected; but when this acute condition develops into a chronic state, the throat will be affected by the inflammation extending down along the mucous membrane, attacking the tonsils, the most common seat of attack, resulting in tonsilitis, or even advancing to and embracing the pharynx or larynx.

Now, how far should a dentist pursue his treatment? Although he may be able to treat tonsilitis, it surely is not more permissible for him to do so than for a physician to treat an alveolar abscess, the result of a putrescent pulp.

I have noticed in tonsilitis, the result of chronic stomatitis, that a cure can be effected by successfully treating the stomatitis, or some-

times it may take one or more local applications on the tonsils. It does not require any length of treatment.

By not treating the stomatitis, the inflammation, if expressed by tonsilitis, pharyngitis, laryngitis, etc., will demand persistent treatment.

Case i.—Stomatitis, the result of salivary calculus. Inflammation extending down to tonsils, causing acute tonsilitis. By removal of the tartar the stomatitis was cured; this was followed by disappearance of tonsilitis.

Case 2.—Patient single, aged about twenty-three years, presented herself with stomatitis, the result of a very painful alveolar abscess, caused by the roots of a superior third molar. Previous history: Always a sufferer from tonsilitis, laryngitis, etc. Tonsil glands removed about eight months previous to this attack. Before abscess manifested itself patient's throat was in good condition. When this abscess started, which caused a severe stomatitis, patient remarked that the inflammation seemed as though it was extending down into the throat. On the next visit patient had same old complicated trouble, which would not have occurred had this abscess not developed.

Case 3.—Lady, married, aged about twenty-four years. Stomatitis, the result of an erupting inferior right third molar. Patient noticed soreness over the locality of the erupting tooth. Tonsilitis was present. Was treated for this by a physician, without any good results. Patient presented herself to me in above stated condition. I immediately lanced over erupting tooth. As an experiment, and not to intrude on a physician's right, I made an application of tannic acid with glycerol to the tonsils. The next day patient could talk and swallow, and in a few days was perfectly well.—*Dental Cosmos, September, 1896.*

THE BLACK TEETH OF THE SIAMESE.—We see that the blackness of the Siamese and Burmese teeth is, on the authority of an Indian missionary, not caused by chewing betel nut and lime, as is often thought, but is produced by a regular process of varnishing. The kernel of the cocoanut is first charred and then ground up with oil to a fine paste. This is then, by some process known to the natives, converted into a hard varnish, which is applied to the teeth and allowed to dry on. Eating does not seem to affect it, and the blacker and more polished the teeth appear, the greater their beauty. No Burmese belle would consider herself beautiful if her teeth were white like a Chinaman's or European's.—*Brit. Jour. Dent. Sc.*

Letters.

NATIONAL DENTAL MUSEUM AND LIBRARY.

WASHINGTON, October 10, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—I think your journal could aid this work materially by printing a concise statement of the object it is aiming to attain. The committee appointed by the American Dental Association in August, 1895, issued a circular letter with reference to the Army Medical Museum and Library, urging the profession to cooperate by sending books, models, etc., and appealing to the state and local societies to appoint auxiliary committees to gather specimens illustrative of all subjects of dentistry.

The following is taken from the proceedings of the recent meeting of the American Dental Association:

Dr. Williams Donnally, chairman of the committee on National Museum and Library, read the report, of which an abstract follows: After reciting the purpose of its appointment, to cooperate with the officers in charge of the Army Medical Museum and Library in enriching its stores of dental literature and museum specimens, the committee referred to the immense value of the opportunity herein afforded the dental profession to accomplish essential objects otherwise impossible of attainment. Never was there opportunity more freely offered a profession to demonstrate its value, to acquire a higher rank among the learned callings, to acquaint the professions and the general public with its achievements, and to secure the preservation, classification, exhibition and facilities for the study of all things pertaining to it of present or future historical and educational value.

The museum contains more than 35,000 specimens, and, like the library, is open to the public, the intellectual property of all professions and classes. Its dental section may be made its most attractive department and the greatest object lesson of its kind in the world if the efforts of the management are met with a corresponding interest on the part of dentists. Dr. D. L. Huntington, deputy surgeon-general, the chief officer of the institution, has recently acquired by purchase a number of valuable and beautifully mounted specimens, most of which are rare. He also purposes to transfer to the dental section such objects as are of special interest to dentists, which are now classified in other sections or distributed through the large general collection, enriching our section with many valuable specimens which dentists could never acquire from their own resources.

The number of accessions so far from the efforts of the committee is small—perhaps one hundred—but an interest has been aroused which warrants the expectation of contributions of the kind needed, namely, series of models, apparatus, drawings, etc., illustrating various operations, methods of treat-

ment, and their results. The committee also hopes that the leading college faculties will illustrate their methods of training, etc. A number of state and local societies have indorsed the action of this association in the premises, and appointed committees auxiliary to this committee.

As to the kind of specimens desired, anything illustrative of any part of dentistry, or which would, alone or in connection with other specimens, throw light on the etiology, pathology, or treatment of diseases and deformities of the teeth, jaws, etc., would attain a greatly enhanced value by being placed here.

Referring to the library, the largest and most complete of its kind in existence, the report suggested that voluntary contributions by publishers and authors would permit the money available for the purchase of their works to be used in other directions equally essential.

As a feasible plan of continuing the work already begun, the report suggested the appointment of five members of this association as a national committee, charged with the duty of promoting the effort to build up a great national dental museum and library; and that this association recommend the appointment of committees auxiliary to the national committee by each of the local, state, and other dental societies in the United States; and that the sum of \$100 be appropriated, to be used with other donations, for the purpose of defraying necessary expenses.

The report was adopted, and the national committee recommended was appointed at a later session, as follows: Drs. Williams Donnally, Washington, D. C.; J. Taft, Cincinnati, O.; H. J. McKellops, St. Louis, Mo.; Henry W. Morgan, Nashville, Tenn.; Thos. Fillebrown, Boston, Mass.

Considerable has already been accomplished. For instance, Dr. Flagg, of Philadelphia, has promised to arrange and donate all of his models, charts, diagrams, etc., used in connection with his lecturing, and showing the changes and improvement in methods of teaching. Several other prominent members of the profession have promised to give their valuable collections to this institution. Some societies have already fallen into line, but it is desired that every society shall cooperate. No money nor anything of commercial value is desired or needed, the institution being abundantly supplied with funds, but everything of value to dentistry as a science and art is desired, and will be properly cared for and exhibited to over 60,000 people and 5,000 post-graduate students annually. Every specimen contributed should bear a correct label, a concise history, the name of the contributor, and be addressed to the Army Medical Museum and Library, Washington. The committee invite correspondence and will otherwise, in any way possible, serve the profession in furthering the object for which they were appointed.

Yours truly, M. F. FINLEY.

NEW YORK LETTER.

NEW YORK, October 20, 1896.

To the Editor of the Digest,

MR. EDITOR:—The incoming steamers are bringing to our shores material for the *incidental* gatherings that occur each month. Not a few men have gone over during the season, and those who did not put in at Dresden in attendance at the American convocation, did not lose their attendance at Nancy. The latter and our W. W. Walker had a greeting, and, according to *L'Odontologie*, it was cordial and hearty and he made a good impression.

It is very probable that the visits will be returned during the coming season by no less notable personages than Dr. J. Leon Williams, of London, Mr. Mummery and Magitot, and President Spalding, of the A. D. S. of Europe. A great treat awaits the profession from Dr. Williams, before the Odontological Society, in connection with the visit of these prominent practitioners. Dr. Williams will give a review of compositive anatomy, its application to practice, and the phenomena of the decay of enamel. (We suggest, can enamel decay if it has no structure?) This paper will bring out a discussion of all the brightest investigators. We think this notable gathering will be at the usual date of the anniversary meeting of the Odontological Society.

We spoke of Dr. Walker's visit to Nancy, the historic city of France. He met with the profession there and observed their "cliniques," which he says are in advance of ours, particularly the treatment of cases, and are conducted with all the advanced methods of antisepsis, equal to any surgical hospital. We are told that one new method is to be added to the monthly Dwinelle clinic.

This recalls the fact that we volunteered five years ago to give a series of surgical clinics before the First District Society, taking care of and following them to a finish and showing what could be demonstrated, but our offer was rejected. Demonstration settles all controversy. If there were more of it in the surgical line at our clinics there would not be so many theoretical papers lumbering up the pages of our journals.

The *New York Tribune* is stirring the dental nerve again upon claims of the "discoverer" of anesthesia by publishing a letter from Dr. G. Q. Colton, some statements in which are as follows; "The late Dr. Sims proved beyond question that, in 1842, Dr. Long, of

Georgia, performed one or two small operations with ether, but he made no publication of it and did not follow it up. * * December 11, 1844, I gave nitrous oxid gas to Dr. Wells, of Hartford, at his request, for he believed it would prevent the pain from extraction, and Dr. Riggs, also of Hartford, extracted a molar tooth, and Dr. Wells felt no pain whatever. This was the first tooth ever drawn without pain and was the real discovery of anesthesia. I then instructed Dr. Wells how to make the gas and he began to make and use it. Soon after he went to Boston to make the discovery known to the world, but everyone, including Dr. Morton, laughed at him. Dr. Wells, discouraged, returned to Hartford, but used the gas as an anesthetic all through 1845. * * * In September, 1846, Dr. Morton used ether and extracted a boy's tooth; then he and Dr. Jackson experimented and proved that ether would destroy pain, after which they applied for a patent, the issue of which was delayed. * * * In the latter part of 1847 Dr. Wells returned to this country (he had gone to Europe in 1845 for his health), and was astonished to learn that Dr. Morton had got a patent and claimed the honor of the discovery of anesthesia. The exciting discussion which took place between them so worked on the sensitive nature of Dr. Wells that he became deranged and committed suicide, dying on January 24, 1848. After the death of Dr. Wells Dr. Morton set up the claim that nitrous oxid was not an anesthetic and that insensibility could not be produced by it, and, therefore, he (Morton) was the discoverer of anesthesia. Dr. Jackson indorsed this statement of Dr. Morton. No one had used the gas save Dr. Wells from the time he went to Europe at the end of 1845 up to the time I revived its use in June, 1863, and demonstrated that it was an anesthetic, and the very best anesthetic for short operations. Here was a period of over seventeen years, during which time the use of this gas lay dead and forgotten. When I revived it and demonstrated that it was an anesthetic Dr. Morton had to change his ground. He could no longer deny that nitrous oxid was an anesthetic, but claimed that Dr. Wells abandoned his discovery; really admitting that Dr. Wells was the discoverer, providing the gas was an anesthetic. * * * Before he went to Europe Dr. Wells administered ether to a gentleman for the removal of a little wen from the scalp. So that in the use of ether Dr. Wells antedates Dr. Morton by two years. * * * Dr. Morton com-

mitted suicide and Dr. Jackson became deranged and was put in an asylum."

It looks as if Dr. Colton were trying to claim the whole credit because he "held the gas-bag." If anyone wants the fair-minded statement we refer him to the proceedings of the California State Dental Association for 1895, where all the facts are given. To be perfectly exact, Dr. John M. Riggs performed the first surgical operation ever made under anesthesia, and he and Dr. Wells are entitled to all the praise. There is something that the dental profession has not been wide-awake enough to claim, viz.: that to it is due the credit that a dentist made the first surgical operation ever performed under anesthesia. Don't let us be modest about this; "nothing but a dentist" has been heard long enough. In *McClure's Magazine* for September is an article by Dr. Morton's widow, in which she gives the whole credit for the discovery of anesthesia to her husband. She also relates the circumstances of his death, which, although very sudden, was not by suicide. Does the profession know that to the late Dr. Riggs Dr. Morton owed his defeat before congress in failing to secure the \$200,000 on his false claim as the discoverer of anesthesia?

Dr. Farrar gave a talk on "Irregularities" before the October meeting of the First District Society, which was interesting and instructive. The 17th the Jersey men will eat a dinner and view some lantern-slides on dental anatomy. "Fill a man's stomach and then talk to him," is a good motto.

The season has been opened by Dr. George Weld, of New York, who spoke of the chemical treating of root-canals and told of a favorite method devised by him, which has enlisted a good deal of interest. It consists of combining a metal and an acid, which establishes, so it is claimed, a permanent antiseptic condition. His paper was one of unusual interest, being demonstrated by chemical tests, and was attentively listened to. Several chemists took part in the discussion. He has devoted much time to his subject and it will receive much attention when published. That he does produce an antiseptic condition in the pulp-canals is demonstrated beyond question, we think. Such demonstrations prove the truth of the late Dr. Atkinson's statement: "I don't call any one a fool any more, but ask him to prove it."

Dr. Bonwill came over from Philadelphia to vindicate his claim,

not only for the whole earth, but the moon also. He claimed when Dr. Horton, of Cleveland, presented at Saratoga his claim for cataphoric effect upon sensitive dentine, that he had discovered the same thing years ago. Of course he was laughed at, but he has produced the U. S. seal as proof, and the patent issued by our government settles it. The document was handed over to Dr. S. G. Perry for inspection, and after a few minutes he arose and said Dr. Bonwill was "entitled to the moon," that the U. S. seal said so.

Cordially, NEW YORK.

EMPHYEMA OF ANTRUM OF HIGHMORE.—Dr. Cobb (*Boston Medical and Surgical Journal*, May 7) writes that Dr. Mackenzie has suggested that the pus discharge be examined for bacilli. This has been done with no important results as regards diagnosis. The staphylococcus pyogenes aureus, albus and citreus and the pneumococcus of Telamon-Fraenkel have been found. The latter is of interest, as pneumonia has followed antral disease.—*Medical Record*.

POST-ANESTHETIC PARALYSIS.—Dr. Vautrin reported three cases of paralysis following anesthesia, seen by himself. One involved the deltoid, biceps and brachialis anticus on the right side, and gradual improvement had taken place during the six years of its existence. Another was of the deltoid and long supinator on the right; the third was facial. In the last two the paralysis soon disappeared entirely. The anesthetic used was chloroform, but the accident might follow other anesthetics. It might be peripheral or central; in the latter hemorrhagic.—*Medical Record*.

COCAIN IN SURGERY.—1. The use of cocain should not be abandoned because its irrational employment has produced deleterious results. 2. Always make a thorough physical examination of the patient before injecting the drug. 3. It should not be used in cases showing organic diseases of the brain, heart, lungs or kidneys, or in persons of neurotic diathesis. 4. Children bear it fully as well as adults. 5. The patient should always be placed in a recumbent position prior to its employment. 6. Constriction should be used whenever possible to limit the action of the drug to a desired area. 7. Use a freshly prepared solution for each case. 8. Distilled water should always be employed, to which phenic, salicylic or boric acid should be added. 9. A 2 per cent solution has a better effect and is safer than solutions of greater strength. 10. Never inject a larger quantity than one and one-eighth grains when no constriction is used. 11. About the head, face and neck one-third of a grain should never be exceeded. 12. When constriction is possible the dose may be as large as two grains. 13. Every slight physiological effect is not necessarily to be taken as cause for alarm. 14. Cocain does have effect upon inflamed tissues. 15. In case alarming symptoms occur use amyl nitrite, strychnine, digitalis, ether or ammonia.—*Codex Medicus*.

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

"THE NATIONAL ASSOCIATION."

The above is the title of a four-page editorial in the *Dental Practitioner and Advertiser*, and it is a tirade against everything and everybody connected with the American Dental Association.

In it a great variety of reasons are given why the association "is petering out"—there being too many side-shows and politicians, and "then the association should be relieved of the hucksters and fakirs and peddlers of every gimcrack notion under the sun." The section system is said to be a failure; the managers are incompetent and are acting for what there is in it, and what is wanted are men disassociated from trade and who are professional men first, last and all the time.

To attempt to follow all the various wanderings would not be profitable, but to discuss the question of what the association should be is well at this time. Ever since our connection with the association exhibitors have shown their specialties and wares. All these outside influences have been in connection with its meetings for certainly twenty-five years. But we quite agree with the writer in that there would probably be better work if less of the exhibit interests were present, although it is not altogether clear that they have much to do with the matter; at any rate they are not the chief cause for complaint. And as to wire-pullers and politicians, if it had not been for them how would Barrett or ourselves ever have gotten into the presidential chair? And during the time he was a candidate he made active work for "the politicians" each year until they succeeded in electing him; and now does he propose, after all the skill thus acquired, to throw them out?

We have never yet seen an association that did not have politicians who took an interest in who the managers and officers should be. But this is not the reason we are not having better meetings, nor do we think it is because the College Faculties' Association, the National Board of Examiners, and the Dental Protective Association hold their meetings in connection with the meeting of the

American, nor is it the fault of the officers, and we presume the writer alludes chiefly to the members of the executive committee. What we need is more literary work, and the literary work of any profession is not produced by rules. However, there must be some organization, either in the way of sections, or committees to represent each local society, whose duty it shall be to prepare the work or material during the year. It has always seemed to us that much of it should come from the different societies, there being about seventy of them. One thing is certain—when the literary productions are such that they arouse the interest they should, the other features which are so objectionable to our friend will be overshadowed and will be only incidental to the real purpose of the association.

If we have a correct understanding of the duty of the officers it is not the place of the executive committee, as a committee, to get up these reports, or to prepare the literary work of the association. These officers are selected to manage the business affairs of the association. So far as our experience and observation for twenty-five years go, the work as a rule has always been well done, and we challenge any man to dispute this assertion. The work of this committee is very laborious and requires a great expenditure of exertion and time, such as the critic has no conception of, and he absolutely refused upon one occasion, when asked to prepare for the local arrangements, to go from Buffalo to Niagara, or to give the matter any attention.

We quite agree that some younger men should be worked into the responsible positions of the executive committee, not because those at present in the committee are incompetent, unfaithful or dishonest, but because they have performed conscientious work and have done more than their share, and if they have had any personal gain we certainly do not know where it has been.

If ever a society were "boomed," to reply to the criticism of the editor of the *Dental Review*, it has been the American Dental Association, with circulars and postal cards each year. All the railroads were communicated with last year and labored with until an association rate was granted by every railroad in the United States. And a communication was sent to each member of the seventy societies, giving him the rate and arrangements and urging him to attend and furnish material.

It is hoped that the arduous work of getting the College Facul-

ties Association and the National Board of Examiners well organized will prove less and less, and it is certainly a very good plan to hold these meetings at the same place as the American, as it lessens the expense, saves time and makes it convenient to attend the different meetings. As to the meetings of the Protective Association, it has always seemed a fitting time for representative men of the United States to know what is being done, both as to the progress of the litigation and protection, as well as to how the money is spent. We are well aware, however, that while a large majority of the members wish this information, for some reason this association has often ruffled the extreme good temper of our friend Barrett.

We might reply with the same kind of despicable insinuations that the writer uses in his article and accuse our friend of being in the employ of an organization that is opposed to the profession banding together, and say that the article was paid for by such organization and written on that account. We make no such insinuations, however. We go farther and make the proposition that we do not believe our friend Barrett meant what he said, as we can hardly conceive of a man who prides himself on his high professional attainments and honor making such insinuations about members of his profession whose integrity and record would compare very favorably with his own. Furthermore, we believe such literature injurious, for what we should do is not to quarrel among ourselves, but let each one do his duty to himself and his fellows. And when this condition is general there will be no fault found with the American Dental Association.

Notices.

PROCEEDINGS OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(Continued from September DIGEST, page 548.)

Monday, August 3, 1896, 3 p. m.

President called the meeting to order.

President Abbott in the chair.

Roll called, and the following states were represented.

Alabama	T. P. Whitby.....	Selma
	J. A. Hall.....	Collinsville

Connecticut.....	George L. Parmele.....	Hartford
District of Columbia.....	Williams Donnally.....	Washington
	M. F. Finley.....	"
	H. B. Noble.....	"
Georgia.....	A. G. Bouton.....	Savannah
Illinois.....	Lyndall L. Davis.....	Chicago
	A. W. Harlan.....	"
Iowa.....	J. T. Abbott.....	Manchester
Kansas.....	A. W. Davis.....	Holton
Nebraska.....	George S. Nason.....	Omaha
New Jersey.....	F. C. Barlow.....	Jersey City
	G. Carleton Brown.....	Elizabeth
	George E. Adams.....	South Orange
	Charles A. Meeker.....	Newark
Ohio.....	F. H. Lyder.....	Akron
Rhode Island.....	C. A. Brackett.....	Newport
Virginia.....	J. Hall Moore.....	Richmond
Wisconsin.....	Charles C. Chittenden.....	Madison

Minutes of morning session read and approved.

The Committee on the Reports of the State Boards of Examiners made their report, and suggested that the secretary the coming year send out printed blanks for the purpose of more readily arranging tabulated reports. Report accepted.

REPORT OF TABULATING COMMITTEE.

Your committee appointed for the purpose of tabulating the returns from the different state boards respectfully report that they have examined the statistics submitted by twenty-seven states and territories and the District of Columbia and we find that the total number of applications for registration has been 951; the number registered has been 780; the number rejected, 171. Of those registered, 533 were graduates.

Figured by states they are as follows:

STATE.	NO. APPLI- CANTS.	REGIS- TERED.	RE- JECTED.	GRADU- ATES.
Alabama.....	17	14	3	16
Arizona.....	4	2	2	..
Arkansas (No examination).....	4	4	..	4
Colorado.....	43	43	..	34
Connecticut.....	27	25	2	18
Delaware.....	9	9	..	9
District of Columbia.....	32	31	1	31
Florida.....	10	10	..	9
Georgia.....	49	43	6	42
Illinois.....	350	260	90	250
Indiana.....		No report.		
Iowa.....	115	114	1	56

Kansas.....	39	34	5	14
Kentucky.....	50	38	12	31
Louisiana.....	27	19	8	Not stated.
Maine.....	11	10	1	7
Massachusetts.....	145	78	67	37
Mississippi.....	13	5	8	3
Montana.....	7	7	..	5
Nebraska.....	41	28	13	21
New Hampshire.....	14	11	3	5
New Jersey.....	32	23	9	19
New Mexico.....	8	4	4	4
New York.....	Report received from Sec'y at meeting.			
North Carolina.....	18	13	5	12
North Dakota.....	4	4	..	3
Ohio.....	139	131	8	87
Oklahoma.....	2	2	..	..
Pennsylvania.....	(No examinations.)			
South Carolina.....	11	9	2	Not stated.
Rhode Island.....	16	15	1	7
Virginia.....	19	13	6	13
Wisconsin.....	61	56	5	46
Total.....	951	780	171	533

Some of the reports are for 1895 and some for 1896, but your committee has endeavored to use figures of an average year's registration as accurately as possible.

In these figures a number of states are not represented, among them being New York, Pennsylvania, Indiana and others.

Your committee have not found the reports submitted entirely clear in all points desired, and we would recommend that in future the secretary furnish to the different state boards printed blanks for their own use in making reports.

Signed, C. A. BRACKETT,
H. B. NOBLE.

Dr. Adams moved a committee of two to consider the suggestions of the president in his address and report at the next session.

President appointed Drs. George E. Adams and George L. Parmele.

The application of the Nebraska state board for membership was reported on favorably and they were elected to membership.

Dr. L. Ashley Faught, chairman Committee on Colleges, read a report.

Mr. President:—A little over six weeks ago I was requested by you to accept the position of chairman of the Committee on Colleges of this association, vice Dr. William E. Magill, deceased, who was vice Dr. Louis Jack,

resigned. In this short time all the work embodied in the report which I shall have the honor to present to you has been accomplished. New as I was to the position and to the details of the work it has been a matter of no little effort to master and to accomplish it.

At the time of my appointment I was a member of the Pennsylvania State Dental Examining Board and represented it in this body. It is proper now before reading this report that I should state that I am here with you by virtue of my right as a member of the National Association of Dental Examiners and to report as your chairman of the Committee on Colleges. It is to be distinctly understood that I am not at present a legal member of the Pennsylvania State Dental Examining Board, and do not in any sense represent that board at this meeting. I make this statement to you because of certain irregular proceedings which took place at the last annual meeting of the Pennsylvania State Dental Society, and which may possibly have attracted the attention of some of you, appearing to affect my status in this National Association of Dental Examiners. While I may not be a *legal* member, I am morally a member of the Pennsylvania State Dental Examining Board, and when the investigation which is now in progress is finally concluded, and its findings are a matter of record, my legal membership in the Pennsylvania State Dental Examining Board will in all probability be established. The National Association of Dental Examiners may therefore feel assured in maintaining any present existing policy touching their chairman of the Committee on Colleges, for it would be manifestly improper to anticipate the Pennsylvania State Dental Society in the investigation now in progress, for justice is to be expected at the hands of my fellow members. I have in my possession several letters setting forth the facts of the occurrence at Bellefonte, Pa., which I shall be pleased to show any individual member who may need any further assurance.

REPORT OF THE COMMITTEE ON COLLEGES.

Mr. President:—The Committee on Colleges would respectfully make the following report:

We have under consideration applications for admission upon the list of reputable schools as follows:

The University of Buffalo, Dental Department, Buffalo, New York.

The University College of Medicine, Dental Department, Richmond, Virginia.

The Birmingham Dental College, Birmingham, Alabama.

The Atlanta Dental College, Atlanta, Georgia.

The Cincinnati College of Dental Surgery, Cincinnati, Ohio.

The Cleveland University of Medicine and Surgery, Dental Department, Cleveland, Ohio.

The applications of the first five on the list have been in the hands of your committee for the required ten months and are therefore eligible for your consideration.

Each of these five is a member of the National Association of Dental Faculties.

The Birmingham Dental College,
 The Cincinnati College of Dental Surgery,
 The Atlanta Dental College,

have the official indorsement of the board of examiners of their respective states.

The University College of Medicine, Dental Department, Richmond, Virginia, has not the indorsement of its state board.

The University of Buffalo, Dental Department, Buffalo, New York, we believe has the indorsement of its state board, but as we could obtain no official evidence of the fact we cannot report it as fulfilling this requirement and leave the point for this body to determine.

The Cincinnati College of Dental Surgery,
 The Birmingham Dental College,
 The University College of Medicine, Dental Department,
 The University of Buffalo, Dental Department,

require a preliminary examination.

The Atlanta Dental College, Atlanta, Georgia, requires only a teacher's certificate, or in lieu thereof the students to pursue what appear to us to be a grammar school course in connection with their dental studies.

The Atlanta Dental College,
 The Birmingham Dental College,
 The University College of Medicine, Dental Department,
 The University of Buffalo, Dental Department,
 The Cincinnati College of Dental Surgery,

comply with the rules regulating the number and length of courses.

The University College of Medicine, Dental Department,
 The University of Buffalo, Dental Department,
 The Cincinnati College of Dental Surgery,
 The Birmingham Dental College,

comply with rules regarding practical instruction between courses.

The Atlanta Dental College does not.

This matter of instruction between courses is deemed by your committee to be very important, and is not accorded the prominence by the colleges in their announcements that it deserves, many not referring to it at all. Being a requirement for recognition by the National Association of Dental Examiners it is to be hoped that the colleges in the future will take notice and correct their omissions in this direction.

Your committee has thus applied your rules to the colleges individually under consideration, for the purpose only of presenting proper information to this association, it being understood by the committee, and they now call your attention to the fact, that the resolution on curriculum of colleges, passed August 5, 1895, applies only to colleges asking for recognition after the close of the sessions of 1895 of the National Association of Dental Examiners. The applications of the five colleges now under consideration were made prior to that period.

The rule requiring three professors in the teaching faculty on *dental* subjects, and five professors in the teaching faculty on *medical* subjects, has pre-

sented such difficulties in its interpretation that we shall not try to make the application of it which was made of the other rules.

By specifically naming what the subjects shall be in both the dental and medical chairs, it does not permit of any doubling up of chairs, such as "Anatomy and Physiology," nor does it permit in our judgment general Pathology to suffice as including Dental Pathology.

Of necessity the only interpretation which your committee could make, and our interpretation is, that eight individuals at least are now required in every faculty, and that these eight shall lecture on the three dental and the five medical subjects as specified.

We believe this rule to be wise and judicious, but that to have any real value, and to accomplish the purposes of its intention, it should be made to apply to colleges on the recognized list, as well as to those seeking admission to it. We would therefore ask for that interpretation of this body on this rule regarding the scope of its application and to its meaning.

The University College of Medicine, Dental Department,

The University of Buffalo, Dental Department,

The Cincinnati College of Dental Surgery,

teach the subjects of Chemistry and Bacteriology in laboratories adapted to the purposes, but in determining the meaning of this rule we have considered the point of bacteriology satisfied when the school possessed a histological laboratory even though bacteriology was not specifically mentioned.

The Birmingham Dental College, and

The Atlanta Dental College possess chemical laboratories, but do not appear to satisfy even our wide interpretation of a bacteriological laboratory.

Atlanta Dental College,

Birmingham Dental College,

University College of Medicine, Dental Department,

University of Buffalo, Dental Department,

Cincinnati College of Dental Surgery,

have suitable lecture-rooms, dental infirmary, a general prosthetic laboratory, and room for manual training in operative dentistry.

The Birmingham Dental College,

The University College of Medicine, Dental Department,

The Cincinnati College of Dental Surgery,

The Atlanta Dental College,

have no member of faculty in their state examining board.

The clinical professor of operative technics of the University of Buffalo dental department is also a member of the examining board of the state of New York.

Our interpretation of the rule which prohibited any member of a college faculty from holding membership in a state board of examiners is, that by faculty is meant the full corps of instructors, and [should include all persons connected with a college in any capacity whatever.

All of the above-stated facts have been ascertained after considerable correspondence and careful scrutiny.

The number of students in actual attendance in all of the schools of the

country for the sessions of 1895-1896, excluding those attending special courses, were 5,963. The graduates were 1,449.

The details will appear later. The comparison with previous years is as follows: 1892-1893, 2,979 students, 340 graduates; 1893-1894, 3,997 students, 911 graduates; 1894-1895, 4,979 students, 1,208 graduates; 1895-1896, 5,963 students, 1,449 graduates.

The following colleges seeking recognition as to their reputability were voted upon and passed:

Cincinnati College of Dental Surgery, Cincinnati, Ohio.

Dental Department University of Buffalo, Buffalo, N. Y.

Dental Department University College of Medicine, Richmond, Va.

Atlanta Dental College was, on motion of the chairman of the Committee on Colleges, laid over for a future session.

Recess was moved and carried until 10 a. m., Tuesday, August 4.

News Summary.

THE CLEVELAND UNIVERSITY of Medicine and Surgery has discontinued its dental department.

WANTED, ANOTHER DOCTOR.—“If I was pa an’ ma,” said Willie, “I’d hire another doctor. The baby we got last time wasn’t finished. It hadn’t a tooth or a hair.”—*Med. Record*.

PRIZE WINNERS in the *Borolyptol* literary contest will be found on page 22 of the advertisements. There were many essays submitted and nearly all were of a high order of excellence.

AN INTERESTING CASE.—Dr. J. R. Boyd, of Waukesha, Wis., reports a curious incident which occurred in his practice. While extracting a second deciduous molar the second bicuspid was also extracted, being firmly attached to the molar by its cord or gubernaculum. There was no remedy, as the undeveloped bicuspid could not be replanted.

THE DERIVATION OF CATAPHORESIS.—Professor Morton in the *Cosmos* is reported to have said in his paper: “The word is derived from the Greek ‘cata’ to flow, and ‘phoreo’ downwards.” Either the professor has been cruelly treated by the printer, or else his Greek has got a bit rusty. “Cata” is of course downwards, and “phoresis” is from “phorein” to carry.—*Brit. Jour. Dent. Sc.*

WHAT IS INDICATED BY THE TONGUE.—A white tongue, according to Dr. Ardhill, indicates febrile disturbance; a brown, moist tongue, indigestion; a brown, dry tongue, depression, blood poisoning, typhoid fever; a red, moist tongue, inflammatory fever; a red, glazed tongue, general fever, loss of digestion; a tremulous, moist and flabby tongue, feebleness, nervousness; a glazed tongue with blue appearance, tertiary syphilis.—*Pop. Science News*.

The Dental Digest.

Vol. II.

CHICAGO, NOVEMBER, 1896.

No. 11.

Original Contributions.

THE BEHAVIOR OF AMALGAMS.

BY W. S. ELLIOTT, D.D.S., SAG HARBOR, N. Y.

Judging from Dr. Black's published articles relative to the behavior of amalgams, it would seem that he has not appreciated the well established natural law which underlies and controls these phenomena. Only recently he claimed that oxidation of the metallic compounds was answerable for the observed variations; but while he has discarded this theory as unsatisfactory he still makes no mention of the law of the "persistence, conservatism and correlation of energy," which law should have been seized upon at first as explanatory of the phenomena of aging. The superficial oxidation of the reduced granules surely could not have the remotest influence over the molecular tendency of the mass to assume a condition antithetical to that forced upon it by an excess of the specialized energy.

I referred to this matter in a short paper read before the New Jersey State Society three or four years ago, and although not able to demonstrate the theory, to my mind there could be no other explanation.

In the violence of reducing the ingot to filings or shavings, as the case may be, mechanical energy is expended, which energy is largely conserved and made manifest in the subsequent behavior of the amalgam. The heat generated is for the most part dissipated, but the molecules have assumed a polarized condition—a static energy capable of release whenever the conditions are favorable.

These conditions are quickly obtained when amalgamation takes place. It is herein that this stored—magnetic—energy is further differentiated into normal energy of crystallization. When the

alloy is freshly cut the static energy is at its maximum of possibility and "setting" of the filling is rapidly accomplished. Aging is a gradual diminution of this force and time becomes an element in the change. This is virtually a process of annealing. In ordinary temperatures it may require months—less time under somewhat higher degrees. The minor behaviors of fillings after insertion, whatsoever they be, are still under domination of the law which must be duly appreciated in all its bearings for a full accounting of the phenomena.

BIOTAXIS.

BY P. T. SMITH, D.D.S., DENVER, COLO. PART OF A PAPER PREPARED BY INVITATION TO BE READ BEFORE THE TWENTY-FIFTH ANNUAL MEETING OF THE NEW JERSEY STATE DENTAL SOCIETY, JULY 18-20, 1895.

Life, though considered the manifestation of a force, must be accepted as a combination of homogeneous elements of material and imponderable aspection from the present circumscribed means of demonstration; yet, through these succinct methods of scientific and theoretical conclusions, which are not only acceptable but obligatory, the result is as unavoidable and conclusive as though the hypothesis had been effected by mathematical exactness. While its ubiquitous presence seems unchallenged and supreme, it is cognizant only through a medium of heterogeneous materials and exemplifies numerically in as many individual elements as have been or can be emphasized in the material kingdom, within the scope of our modern comprehensive means. When in the primordial exhibition of material substance through the evolutionary androgynous quality latent in the immaterial transmuted elements, it was imperative that the germinal exude should bear likeness in harmonious difference to the parental source. After which ordeal of difficult parturition had been passed in the course of vital assertion the great proclamation of life had been exemplified, and its onward course was an easy march from thence forward through all varied forms determined in the likeness of some previously inborn combination of architectural harmony. And through this primate principle of the positive elements of evolving in proportion and in kind its prototype in opposite, negative material, which, when united in accordance with the epicurean philosophy with atom to atom, positive to negative, throughout the entire compact sphere, an individual organism of

original authority was set forth, independent unto itself, capable of subsisting and perpetuation upon the subservient elements that are correlated to its composition.

Thus briefly intimating but distant promontories of animate origin along the line of intricate and tedious research, it is befitting, under compulsory brevity, prompted by respect to the occasion, to hasten away from the alluring mirage of heightened passion for charms that kaleidoscope the mental horizon of the ardent metaphysical student in the realms of such bountiful and delightful fruitage, on to the more practical proximate environments of this pabulous realm.

Now we assume to find ourselves at the threshold of organized, individual independents whose life peculiarities of existence, reproduction and perpetual multiplication cheer the expanding delight to a chord of Apollonic charms.

Macary, de Vries, Weisman, Herbert Spencer, Saltus, Leopardi, Schopenhauer and other biogenists, in treating of the subject of organic construction, elaborate upon the material constituency from the theoretical units, biophores, determinants, ids, idioplasms and forms of bio-chemical expression.

The divisions and classifications in the order of their dependent functions subserve an important purpose in the comprehension of the most intricate and interesting of the immaterial constituent elements of living matter.

This vis-plastrix of organic composition is a sovereign factor in all promethean display, though of such subtle yet positive character that its realms are shunned and neglected through fear and dread of incomprehension by those who have wandered by aid of the Diogenesic lamp through the mysterious labyrinths of this obscure primogenial phase, and they have at last failed to hand out to the hungry student that pabulum of mental nourishment for which our souls do most thirst and our lives grow weary and waning under the dismal aureola of savantic despoil.

As a basis for the premises predicated upon such hypothesis thus vouchsafed the conviction arises from the fact of a governing force, which has an imponderable existence.

It is this material which takes precedence in all formative organic action. It is this material which endows the protoplasm with its peculiar difference from other viscous and ropy fluids. It is this

vital force, which goes forward with chartered power, design and primate material for the new object to be created.

The great mass of material substance, and of which scientists have said there are about about sixty-seven distinct primates, is all but an epitome of this regal power, without which not a single atom of material substance could find its way, or exist in organic structure without irritation. Every atom of material substance is but a vehicle—a means to a higher and more noble end of this umpire element.

All living organisms are possessed of dual or chemotaxis properties, the one vis-vitæ or projective, the other material and subjective. There can be no single element or atom of existing material without its factive progenitor. All creation of material elements is but a reflex of the archetypal matrices.

Illustrating more definitely, citation may be made to the union of two cells in the process of amphimixis, which union is effected by the chemotaxis properties of each cell. Biologically considered, the ova cell is positive to the spermatazo cell, which is negative; therefore a current of attraction is established between the two bodies when brought within a zone of their limited powers of action and under conditions favorable for its establishment. Coalescence and fertilization now take place, when partial apathy of the new body follows. At this juncture the sex of the germ is determined by the superior vigor of the vis-vitæ of the ova cell or the spermatazo cell. Supremacy of the former will guarantee an opposite sex and vice versa. Under the oscillating principles of life continued inertia is impossible; immediately the newly-formed germ becomes *negative*, and in that condition attracts immaterial elements in kind and quantity equivalent to the bathmism properties of the germ, tempered by the maternal source of supply. The new germ by this inflow of food now becomes *positive* by the process of ontogeny. Now, as the pendulum of oscillating action sweeps across the disk of life, passing the center of apathy on its way to the opposite side, material substances are again needed and attracted by the new body, and only such substances are exercised in the action as are required by the *positive* elements within the zone of new life, now nucleolar in exhibition and alternately demanding material elements as the body is positive, and immaterial elements as it is negative, through the great course of ontogeny.

Further and commonplace illustration of the principles of growth by evolution, in which the composition involves all the elements existing within range of comprehension under a geometrical ratio, resulting in all the diversified forms of growth and character that spread out in a great panoramic display of Flora and Fauna in bewildering attraction before the awe-stricken view, may in one simple form be effected by citing to the architect and workmen the design and construction of a great building. First, there has to be a complete conception realized by the author of the building which corresponds to the positive elements in organic composition. Next, the management and direction of each specific workman in conveying the different materials in kind and quantity required and determined by the directing force. Concrete, cement, stone and mortar for the foundation, are all in their turn forced to their respective places in the formation. Mental comprehension of the methods and means required by the architect, also thought, action and force by the workmen in arranging consecutively each material as the necessity of the superstructure and plans ultimately require.

As the material growth of the architectural conception progresses, it can be seen how many different kinds of material there are employed, and at what precise and intelligent time and in what quantity each is selected, and that all passive or subjective materials, as they are put in place, are visible or comprehensible by the physical senses; while the immaterial architectural force is not visible, though nevertheless active and real.

In the formative proteid elements, composing each of the parental cells before and at their coalescence, are found all the biophores bearing potential characteristics of both parents. Here the mental and physical qualities are all aggregated in the germ-cell; by their proliferation determinates are developed from which ids and idioplasm are evolved, by which methods of differentiation all the varied substances in organs of whatever function are proliferated under the directions of the determinants and ids and the law of amphimixis.

OPENING THE ANTRUM.

BY M. C. SMITH, D.D.S., M.D., LYNN, MASS.

In opening the antrum, the most important thing is first to find out if the opening from the antrum to the anterior nasal fossa be open. If the trouble in the antrum is first discovered by the rhinol-

ogist, it is generally from complications in the nose and the natural opening is closed; it discovered by the dentist, it is generally from dental irritation and the natural opening is not interfered with.

Find the dead tooth that is the source of irritation; open into the pulp-chamber, and wash out with plenty of warm water. Select the largest root-canal, and if it is not big enough enlarge clear into the antrum, and with a hypodermic or a Dunn syringe wash out the antrum. I prefer H_2O_2 full strength. Tip your patient well forward so that the drainage from the antrum will run out the nose. Have a little hot brandy or hypodermic handy, for your patient may collapse, not from pain but from the odor. Seal up the tooth and everything is safe; you have a canular that won't move and is always ready.

If a tooth has to be extracted, any tooth from a cuspid to a third molar, a sharp bur in the right direction will soon open the antrum. Pack the opening with iodoform gauze, as nothing else keeps as sweet in the mouth for so long a time.

I have tried a good many solutions for washing out foul antrums, but if a patient has had H_2O_2 used once and you try anything else, he will tell you either to use H_2O_2 or he will employ some one who will use it.

If the opening into the nose is closed, then a larger opening into the antrum is necessary.

WOODEN TOOTHPICKS.

BY H. R. NEEPER, D.D.S., HANNIBAL, MO.

The cheap wooden toothpicks, such as are found on the counters of the hotels and restaurants and are so generally used, are an abomination. They are clumsy, thick at the "points," and what is worse, are brittle—so much so that when sharpened sufficiently to force particles of food from between closely planted teeth the points are left between the teeth.

We have had cases present such soreness and swelling that at first glance we thought an abscess was forming, but closer examination proved it to be caused by pieces of toothpick broken off in the space. The gums had been torn and punctured and the ragged ends of the wood remaining had caused the serious trouble. We have removed as many as five pieces of pick under these conditions. We have

seen two cases where the entire soft tissues had been torn from between the teeth and the alveolus exposed.

A great many persons, both men and women, have the "toothpick habit" of always sticking a pick in a certain space after each meal, even if they have eaten nothing but clear soup. By the time they have practiced the habit long enough to consult us about that "very sensitive place just above the gums," we find they have crowded the festoon down until the neck of the tooth is exposed, with all the sensitiveness to heat, cold, touch and proneness to decay that accompany this condition.

Our first treatment is to give the patient a lecture on the use and abuse of the toothpick. Then we thoroughly cleanse and remove all foreign matter, touching the sensitive places with carbolic acid. If a second treatment is necessary we touch with nitrate of silver. The patient is directed to put a small pledget of cotton in the space before meals, and after eating to brush and rinse the teeth thoroughly and then to remove the cotton and rinse again. As a rule the annoyance ceases and the gum fills the space in a few days' time.

TOOTHACHE DROPS.—Equal parts of carbolic acid crystallized, camphor, chloral hydrate, menthol and glycerin. Pulverize separately the camphor and chloral, mix, and when liquefied add the menthol, previously triturated, and lastly the carbolic acid and glycerin liquefied together by heat. In packing the tooth cavity with this, none of the fluid should be allowed to ooze over the gums — *Western Druggist*.

DENTAL INSPECTORS FOR SCHOOLS—The Ontario Board of Health recently adopted the following resolution: "That dental inspectors be appointed by local boards of school trustees to periodically visit schools and examine children's teeth, and that a dental hospital be started in Toronto for the benefit of poor children; and these recommendations be urged upon the attention of the minister of education." — *Medical Mirror*.

INFLUENCE OF CONDIMENTS ON DIGESTION.—The action of condiments when taken with food is not definitely understood, though it is generally understood to be beneficial, as promoting digestion. An observer named Gottlieb has recently confirmed this view to some extent, as the result of experiments on rabbits. A cannula being introduced into the pancreatic duct, pepper or mustard was allowed to pass into the stomach, and the secretion of pancreatic juice was found to increase to three or four times the normal quantity. It appeared more watery than usual, but possessed the same digestive powers as ordinarily. — *Phar. Journal*.

Digests.

WHY AMALGAMS FAIL. An extract from a lecture by Prof. Charles Steel, on "Metals and their Behavior when Alloyed."—Let me impress upon you to use only metals of known degrees of purity. I have frequently called your attention to the remarkable results produced in combining metals—how the union of two *soft* metals will sometimes produce a *stiff, refractory* alloy; how two metals, behaving well in the mouth separately, may, when alloyed, be acted upon most disastrously. A *very small per cent* of some metals will frequently change the entire nature of an alloy. We may doubtless account for the apparently inexplicable failures of good amalgams under some circumstances by the impurity of the mercury used. All native mercury contains lead in varying proportions. It is most difficult to extract this metal entirely from the mercury. Lead, even in minute quantities, exercises a most deleterious effect on amalgam fillings, and indeed on nearly all the finer metals used by the dentist. See to it, then, that the mercury you use in your amalgam is as absolutely pure as it can be obtained. While speaking of mercury, it just here occurs to me that this metal may in another way cause the variable results sometimes obtained from the same alloy. You know that when we undertake to combine the mercury with the alloy, it seems almost impossible to get a perfect solution without using an excess of mercury, which excess is frequently pressed from the mass. It is doubtful whether it is mercury alone which is thus pressed out, but more than likely that it is combined with some portions of the other metals. It has greater affinity for some metals than others, hence brings away different proportions; so if too great an amount of mercury is used, we may seriously injure a nicely adjusted alloy.—*Bi-monthly Bulletin.*

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DENTAL ANATOMY IN ITS RELATION TO CROWN AND BRIDGE WORK. By Raymond J. Wenker, D.D.S., Watertown, Wis. Read before Wisconsin State Dental Society. After having received the appointment by your president, a number of letters were written to specialists, in this and neighboring states, asking

which they consider the more important in extending a band beneath the gingiva in crowning, the border of the alveolar process or the peridental membrane. Of those replying the majority consider the peridental membrane the more important, while a few believe that the alveolar process is fully as, if not more, liable to encroachment.

On the whole, judging from statements made by practitioners, there appears to be a shadow of uncertainty as to the exact relative position of these tissues. The gingival line is at the junction of the enamel and cementum. It is the dividing line between the crown and root, and marks the limit crownwise of the attachment of the peridental membrane. In its course it forms several marked curvatures. The average curvature on the mesial surface of the respective teeth, in fractions of an inch, is as follows:

Palmer	“.11	.11	.09	.04	.03	.08	.05	.02”
Notation.	1	2	3	4	5	6	7	8
	1	2	3	4	5	6	7	8
	“.09	.09	.11	.03	.02	.04	.00	.00”

The curvature on the distal surface is usually somewhat less.

The alveolar process normally envelops the roots of the teeth to within a short distance of the gingival line, varying from one forty-eighth to six forty-eighths of an inch in the young adult. This distance increases somewhat with advancing age.

The borders of the process on the labio-buccal and lingual sides normally present a series of imperfect semicircles, nearly corresponding with the curvature of the gingival line of the several teeth. The borders of the septa, in the anterior part of the mouth, are arched, but this diminishes rapidly from the cuspids backward. Between the molars it presents either a straight line or a slight concavity, so that the highest points of the process are at the angles of these teeth.

The peridental membrane invests the roots of the teeth farther crownwise than the alveolar process, in normal condition investing them as far as the gingival line. In the gingival portion, or that part of the membrane between the gingival line and border of alveolar process, the fibers pass out nearly at right angles with the long axis of the root. Those arising at or near the gingival line, after passing out a little distance, are lost in the fibrous tissue of the

gums. Farther rootwise the fibers pass over the border of the alveolar process and are continuous with the periosteum.

The line of attachment of the membrane normally corresponds with the curvature of the gingival line, so that in this condition the distance between the line of attachment and the border of the alveolar process is from one forty-eighth to six forty-eighths of an inch, in the young adult. But under certain conditions the membrane may recede or become detached, thereby removing the line of attachment somewhat rootwise. After a careful consideration of these facts, it became evident that special measurements would be necessary to determine this distance under the many varying conditions. Accordingly such measurements were taken from fresh cadavara in the dissecting-room of the Milwaukee Medical College and School of Dentistry. They indicate a variation of from one forty-eighth to three and one-half forty-eighths of an inch.

These examinations show that in the young adult with perfectly formed teeth and healthy gingivæ, the distance is less than in subjects wherein these tissues are defective. In cases of advanced age, where gingival cavities or deposits of serumal calculus were present, the distance appeared greater than where these conditions were absent. They further show that the alveolar process cannot be encroached upon with a band, except by cutting through the gingival portion of the peridental membrane.

The gingivæ, or free margins of the gums, normally invest a narrow portion of the crowns of the teeth, from the gingival line crownwise. The width of the gingivæ, from the edge to the line of attachment, varies in the same mouth, and in different individuals. They are usually widest in youth and diminish as age advances.

The gingival septa, situated between the crowns, are wider than the body. In normal conditions they completely fill the interproximate spaces, from the gingival line to the point of proximate contact. A number of measurements of the width of the gingivæ taken on the labial and buccal surfaces of the teeth, from patients in private practice, show a variation of from two forty-eighths to six forty-eighths of an inch, between the ages of ten and thirty.

The natural order of variation in the relative position of all the investing tissues is frequently modified by some mechanical cause. For example: a tooth requiring an artificial crown usually has lost its contour in a sufficient degree to allow food to pack in the inter-

proximate spaces, thereby causing recession of the gingival septa, detachment of the peridental membrane, and resorption of the alveolar septa.

Where a bridge is required, recession has taken place next to the edentulous space, often to such a degree as to expose the gingival line. If the recession is due to a mechanical cause, and the tissues are not impaired, after its removal the gingival septa, at least, will return to their normal position. The question then arises: How far beneath the gingiva should a band be extended?

No matter what the age of the patient, or degree of recession of the investing tissues may be, extend the band beneath the gingiva sufficiently only to subserve the purpose of a band. Extend it an equal distance, at all points, beneath the edge of the gingiva, and a safe distance from the line of attachment of the peridental membrane. Give nature a chance, where conditions are favorable, to reattach the membrane. Give her a chance to replace the gingiva in its normal position.

The great fault lies in extending the band too far beneath the gum line; believing ample extension necessary to prevent ultimate exposure; losing sight of the fact that in so doing you are encroaching upon and even detaching the peridental membrane. The farther it is extended the greater will be the difficulties encountered; the soft tissues will be lacerated, materially impaired, the tooth improperly shaped, and a poor-fitting band the immediate result. However perfect nature may, in a few weeks, conceal this fallacious condition, the very perversion you have endeavored to prevent will be the least that may follow, inflammation, recession and decay.

To obtain the best results, the gingiva should be temporarily dilated and receded before preparing the tooth to receive a band and before setting a crown. This can be readily accomplished by twisting absorbent cotton on a waxed ligature and tying it around the tooth against the gingiva the day before operating. The gingival border of the band should not only be in proper relation to the line of attachment to the membrane, but it should also be dressed to a thin edge, and fit snugly to the tooth on all sides. When the surface of a tooth which is to receive a band cannot be made convex in a line parallel to the border of the gingiva, the band should be burnished to fit this concavity. But if the concavity is in the form of a deep fissure, it should be filled with gold or amalgam.

The following teeth are more or less difficult to band, by reason of their form at or near their cervixes: The upper lateral, when fissured on the lingual surface. The upper first bicuspid, when deeply concave on the mesial and distal surfaces. The upper first molar, when grooved on the distal and lingual surfaces. The upper second molar, when deformed. The lower first bicuspid, having an unusually constricted neck. The lower first molar, being usually flat or concave on the mesial surface. And, when considerable recession of the investing tissues has taken place, the molars are especially difficult to band.

Where the contour of a tooth has been lost for some time, or the points of proximate contact have been flattened by wear, the width of the interproximate spaces is not infrequently reduced, by nature's effort to maintain the contact of the teeth. The normal width of spaces must be restored to protect gingival septa from any unnatural pressure and the proximate surfaces of the adjacent teeth from decay.

The average width is about one-tenth of an inch, the narrowest being between the incisors and cuspids, the widest between the molars, and the intermediate between the bicuspid. But the normal size in a given case should be determined by ascertaining its width between similar teeth and the mesio-distal diameter of a like tooth in the same mouth. To place a crown with too great a mesio-distal diameter in a conspicuous position in the arch would be going to the extreme, although this can be done in the posterior part of the arch, in special cases, with good results. The normal width of the space having been restored to maintain it, the artificial crown must contact firmly with the adjacent teeth and correspond with the typical form as nearly as circumstances will permit.

The points of contact, in the most perfect dentures, are near the occlusal surfaces. In the incisors and cuspids they are in line with the cutting edges, following the curve of the arch. In the bicuspid and molars they are nearly in line with the buccal cusps. The typical point of contact is at a single smooth, round point, such as would be made by the contact of two spherical bodies. If the points of contact of the natural teeth are somewhat removed to the lingual it may be advisable, and even necessary, to make the artificial crown contact accordingly. With this exception the typical contact should always be secured.

Having the artificial thus far constructed the next important step is the occlusion. The typical form is such as to make the best possible adaptation of the occlusal surfaces of the teeth; the ridges and cusps fitting into the sulci and fossæ of the opposing teeth; each tooth occluding with two in the opposing jaw, except the lower central incisors and upper third molars.

The relative mesio-distal position of the respective teeth of the upper to those of the lower jaw in the typical occlusion is as follows. Typical occlusion represented by the Palmer notation. Abbreviations used, M. mesial; D. distal.

- ¹ occludes with ¹ and M. $\frac{1}{3}$ to $\frac{1}{2}$ of ².
- ² occludes with D. $\frac{1}{2}$ to $\frac{2}{3}$ of ², and M. $\frac{1}{3}$ of ³.
- ³ occludes with D. $\frac{2}{3}$ of ³, and M. $\frac{1}{2}$ of ⁴.
- ⁴ occludes with D. $\frac{1}{2}$ of ⁴, and M. $\frac{1}{2}$ of ⁵.
- ⁵ occludes with D. $\frac{1}{2}$ of ⁵, and M. $\frac{1}{3}$ of ⁶.
- ⁶ occludes with D. $\frac{2}{3}$ of ⁶, and M. $\frac{1}{3}$ of ⁷.
- ⁷ occludes with D. $\frac{2}{3}$ of ⁷, and M. $\frac{1}{3}$ of ⁸.
- ⁸ occludes with D. $\frac{2}{3}$ of ⁸.

In exceptional cases it may be necessary to give the artificial an abnormal occlusion, but in general no improvement can be made by deviating from the typical.

While considerable might be added, yet on the whole, if we will be guided in our daily practice by what has been given, fewer cases will be met wherein the imperfection of the artificial is manifested by the perversion of the natural.—*Dental Review*, Sept. 1896.

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CELEBRATION OF THE INTRODUCTION OF ANESTHETICS. October 17, 1846, a venous tumor of the jaw was removed by Dr. Warren without pain, the patient being placed under ether by William T. G. Morton, a Boston dentist, and the next day a fatty tumor was removed; and in a few days, after the performance of some minor operations, Dr. Hayward, in the presence of Dr. H. J. Bigelow and others, amputated the thigh of one Alice Mohan, Morton, as before, administering the ether. "From this date," says Lyman, "the success of anesthesia was placed beyond all doubt. The great discovery was immediately heralded throughout the civilized world, and was everywhere adopted with the utmost enthusiasm."

To properly celebrate the semi-centennial of this great discovery, the Massachusetts General Hospital has issued an invitation to a

limited number of guests to participate in the ceremonies. It will be noted that nothing in the invitation can be construed into an assertion of priority of use; for the medical public are now well aware that sulphuric ether had been used by inhalation for dentistry and minor surgery by W. E. Clarke and Crawford W. Long, but it was reserved for the Massachusetts General Hospital to have the first capital operation and to make the world hear. She can then with all propriety and conscious pride celebrate the semi-centennial of an event that connects her name indissolubly with the greatest boon that has yet been vouchsafed to man.—*Journal Am. Med. Ass'n, October, 1896.*

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CONGENITAL TEETH. Ballantyne (*Edinburgh Med. Jour.*, May, 1896) delivered a child in 1894 and a few days after birth found that the two lower central incisors were cut. They resembled in their character teeth discolored by the use of iron tonics. Two new central incisors appeared in their place about the seventh month. The mother believed that the earlier pair were absorbed; Ballantyne thinks it more probable that they simply dropped out. The child remains healthy. Buist in 1893 detected the two lower central incisors already cut in a child born at term. The gum was swollen and the teeth loose. Both came out within a month and have not been replaced, although the dentition is otherwise normal. Vargas, of Barcelona, in 1895 examined an infant two days old, suffering from tongue-tie and a projection from the lower gum a little to the right of the middle line. It was cut away under cocain and proved to be an extra-alveolar dental sac containing an incisor with no root. The literature of the subject is reviewed by Ballantyne. Congenital teeth are usually lower incisors, seldom upper incisors, and very rarely molars. Cases like that reported by Vargas and published by Ballantyne undoubtedly represent ectopia of the dental follicle. The majority simply signify premature development of the teeth. Congenital teeth interfere with suckling and are ill-developed; they should therefore be removed. They have little if any relation to the health of the infant.—*British Medical Journal.*

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EUCAIN. By J. C. Clemesha, M.D., M.R.C.S. Eng., L.R.C.P. Lond., Buffalo, N. Y. In a paper before the Hufeland Society, Berlin, April 16, 1896, Dr. Vinci, of Messina, described the chem-

ical composition and properties of a new compound, which, for convenience sake, has been called eucain. This new drug, it is stated, is not derived from the vegetable kingdom, but is a laboratory product, and its proper name is methyl-benzoyl-tetramethyl-gamina-oxy-piperidine-carbonicacid-methyl-ester, while the salt in use is the muriate which crystallizes from a watery solution in permanent shiny scales and is soluble in water to the extent of 6 per cent. Furthermore it can be prepared in any quantity, and I believe the intention is to put it upon the market at a cost considerably below that of cocain. Dr. Vinci described eucain as possessing the properties of cocain as a local anesthetic, but as being less toxic and as having no effect upon the pupil.

Having read an extract of the above paper, and realizing, if the statements were accurate, that an important addition had been made to the list of drugs used in ophthalmic practice, Dr. Howe procured a supply from the New York agents and a 5 per cent watery solution was prepared. The first day it was used at the Buffalo Eye and Ear Infirmary was in a 5 per cent solution and in the following cases: (1) Removal of a foreign body imbedded in the cornea; (2) removal of granulation after a strabismus operation; (3) the operation of tattooing the cornea. In the foregoing cases the patients complained that the instillation was followed by a smarting, pricking sensation, lasting some minutes, while it was noted that some hyperemia of the conjunctiva was produced, which remained for half an hour or so after the anesthesia passed away. Anesthesia was complete in from five to ten minutes, none of the patients complaining of the least pain during operative manipulation. It was also noted that the pupil did not dilate, but reacted well to light, and that the corneal epithelium showed no tendency to become sodden, as it does after the application of cocain.

The day following Dr. Howe used it with complete success in a strabismus operation, and it has been used for extractions and iridectomies, the patients complaining of no pain whatsoever.

Later a 1 to 2 per cent solution was prepared, and it was found that anesthesia was as readily produced without the pricking sensation which follows the application of the stronger solutions, and these weaker solutions are being employed at the infirmary for the removal of foreign bodies in the eye and other minor operations.

Comparison was made with a 2 per cent solution of cocain and a solution of eucain of the same strength, with the result that the two drugs were of the same value as regards rapidity, duration and intensity of the anesthesia.

Eucain has been proved to be less poisonous than cocain. Animals treated with eucain survived, while animals injected with the same doses of cocain perished. The heart is in no way influenced by it, while it is a well-known fact that dangerous symptoms often arise from the use of cocain. Professor Charteris, of Glasgow, has made comparative experiments with the hydrochlorat of eucain and the hydrochlorat of cocain. Watery solutions of these salts were injected into guinea-pigs, beginning with a small dose and gradually increasing it until the lethal dose was accurately ascertained. It was found, after many experiments, that the toxic dose of eucain per kilo body weight was 0.09 gram, and that the toxic dose of cocain per kilo body weight was 0.068 gram. It was also noticed that the physiological action produced by a given dose of eucain did not follow nearly so rapidly as that which followed a similar dose of cocain, hence it was concluded that the action of eucain was slower in onset and less in intensity. Finally, eucain solutions are stable and permanent and do not decompose, like those of cocain when kept for a time.

Tropacocain, another local anesthetic, seems to be midway between cocain and eucain. It is less toxic than cocain, and on instillation produces slight smarting and some hyperemia of the conjunctiva. Mydriasis is usually absent and the anesthesia is more quickly complete and does not last as long as cocain. Unfortunately its manufacture has been abandoned on account of the difficulty of its preparation.

Eucain has also been employed in dentistry for the extraction of teeth; 3 to 5 minims of a 10 per cent solution, injected into each root to be extracted, is sufficient. It has also been used in laryngology and, in the form of an ointment, in painful skin affections. —*Buffalo Medical Journal*, October, 1896.

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ORAL SURGERY. By Edmund W. Roughton, B. S., M. D. (Lond.), F. R. C. S. Eng. Diseases of the Gums. The mucous membrane of the gums is liable to the same inflammatory affections as that lining the rest of the buccal cavities. These and tumors of

the gum have already been described, but there are some other diseases which require mention.

Hypertrophy of the Gums. This may result from the irritation caused by badly fitting dentures or accumulations of tartar. In such cases the hypertrophy is not great, and it is very seldom that it is necessary to do anything more than remove the cause of irritation. But in children a peculiar variety of this disease is sometimes encountered. It commences at the time that the temporary teeth are being cut—between the ages of six months and two years. The gum increases in size so that eventually the teeth become almost completely hidden from view by large papillomatous or polypoid-looking projections of the same color as the normal gum; although in places they are soft, vascular and spongy-looking, they are mostly firm and fibrous to the touch. The disease usually affects the whole of the alveolar arch in both jaws, but may sometimes be limited to the incisor region. In some cases the overgrowth is sufficiently large to project from the mouth and to bulge out the cheeks. Mastication is considerably hampered.

Microscopic examination proves the growth to be a pure hypertrophy of the gum, chiefly the fibrous portion. In structure it consists of a dense stroma of interlacing fibers, containing much glandular tissue in its interstices and covered on its surface by large and vascular papillæ. The growth appears to start from the periosteum around the necks of the teeth.

The subjects of this disease are often deficient mentally. Sometimes it occurs in several members of the same family.

Treatment. It will not suffice simply to pare away the hypertrophied tissue, as recurrence is pretty sure to follow. This is owing to the disease affecting the sockets of the teeth as well as the gum. To effect a permanent cure it is necessary to remove the alveolar margin as well. The germs of the permanent teeth in the vicinity of the disease must be avoided as far as possible.

Polypus of the gum is the name given to a localized hypertrophy of a portion of gum usually between two teeth. It is produced by the irritation of a rough or carious tooth, tartar, or some portion of an artificial denture. In microscopic structure it resembles gum-tissue. Sometimes the growth encroaches upon the cavity of a carious tooth so as to simulate polypus of the pulp, but it may be distinguished from the latter by its greater sensitiveness and by its

pedicle or base of attachment being between the teeth and not within the carious tooth.

Treatment consists in removing the source of irritation and snipping off the growth with scissors. Its base should be touched with nitrate of silver or with the electric cautery. Recurrence does not take place after effectual removal.

Diseases of the Floor of the Mouth:

Ranula. A ranula is a cyst under the tongue, usually on one side of the frænum. Different views have been held as to the nature of the cyst and its mode of formation. It was formerly thought that it was always the result of dilatation of Wharton's duct. Although some ranulæ may be due to this cause, the majority of them are of a different origin; the shape of the swelling is not that of a dilated duct of Wharton, nor is the submaxillary gland itself swollen as it is in cases of obstruction of the duct by a salivary calculus; moreover, it is sometimes possible to pass a fine probe along the duct for an inch or more by the side of the cyst. Ranula has also been attributed to dilatation of one of the ducts of the sublingual gland, but the shape of the swelling and the condition of the gland itself negative this view. It is now held that the disease is usually due to dilatation of the duct of the Blandin-Nuhn gland, a small mucous gland situated on the under surface of the tongue a little to one side of the middle line. Von Recklinghausen had the opportunity of dissecting a subject in whom there was a ranula, and discovered the remains of the Blandin-Nuhn gland projecting into the cavity of the cyst; he also found that the epithelium lining the ranula was similar to that of the gland.

The disease is nearly always very chronic; it causes no pain and may pass for a long time unnoticed. The only subjective symptoms which it produces are a slight discomfort in mastication and a sense of fullness under the tongue. When the mouth is opened and the tongue turned back a ranula is plainly visible as a smooth bulging swelling of a deep bluish color, tinged with pink, and more or less translucent; large tortuous vessels are often seen coursing upon its surface. It is usually very soft to the touch, but may feel tense; fluctuation can be easily detected.

Treatment usually adopted is to cut out a portion of the cyst-wall with scissors; the fluid thus evacuated is clear and viscid. A simple incision without removal of a portion of the cyst-wall is

usually followed by a reaccumulation of the fluid. Some surgeons prefer to introduce a seton and leave it in position for a week. If the above method fail, a triangular flap of the cyst-wall should be cut and stretched back into the cavity of the cyst; this effectually prevents the cyst from closing before its cavity is filled up. Lastly, the cyst may be completely removed, but the proceeding is a difficult one.

Dermoid Cysts. These in the floor of the mouth are due to the folding in of a portion of the integument during the coalition of the two lateral halves during development, or to imperfect obliteration of the lingual duct. In this manner a cavity lined by skin is formed. The epithelial lining of the cyst wall is usually tough and fibrous; it produces a thick material resembling sebaceous matter and composed of cast off epithelial cells, oil, cholesterine, fatty debris and sometimes hairs. The cyst is situated either in the middle line between the two genio-hyo-glossi muscles, or a little to one side between the genio-hyo-glossus and the mylo-hyoid. It is usually single, but sometimes one is found on each side of the middle line.

Although of congenital origin it is very seldom that dermoid cysts in the floor of the mouth are noticed before the age of fifteen or twenty. The subjective symptoms which they produce are of but slight importance, although more pronounced than those produced by ranula, owing to the more solid nature of the cyst contents; discomfort in eating and speaking and a sense of fullness are usually the only symptoms complained of.

The tumor projects both into the floor of the mouth and in the neck between the chin and the hyoid bone, forming a lump as large as a hen's egg or larger. The surface of the tumor is smooth and its outline rounded or elongated; the mucous membrane covering it is of a yellowish tint, and not translucent as in ranula; pressure produces distinct pitting in some cases. Fluctuation can usually be obtained both inside the mouth and in the neck, but the feeling is much more doughy than in a case of ranula. The diagnosis is usually easily made. In case of doubt it may be cleared up by an exploratory puncture.

Treatment. The cyst may be incised through the mouth, and the cavity packed with gauze after evacuation of the contents. It is, however, more satisfactory to remove the sac completely; if the

tumor be small this can be easily done from within the mouth. If the tumor be a large one it must be removed through an incision below the jaw, either in the middle line of the neck or over the most prominent part of the tumor; the dissection is not usually difficult or dangerous.

Salivary Calculus. A salivary calculus not very uncommonly forms in the duct of the submaxillary gland. In size and shape it somewhat resembles a fragment of slate pencil. It consists of phosphat and carbonat of lime and phosphat of magnesia. It forms very slowly and may remain for years without causing any symptoms; but eventually inflammation is set up, the surrounding tissues become swollen and painful, and the duct more or less completely obstructed. As the result of this obstruction and of inflammation spreading backwards along the duct the submaxillary gland becomes enlarged.

When the interior of the mouth is examined the tongue is found somewhat swollen; the parts between the tongue and the floor of the mouth on the affected side are red, swollen and tender. On palpating beneath the jaw the submaxillary gland is found to be enlarged and hard, but not as a rule tender to the touch. The presence of the symptoms just enumerated should always lead to an examination of the submaxillary duct. On introducing a fine probe a rough and gritty mass will be felt, usually near the orifice, but sometimes further back.

Treatment. The calculus must be removed through an incision made directly over it. Great care should be taken not to break it, as any fragments left behind are difficult to remove and are apt to cause even greater irritation than the original concretion.—*British Journal of Dental Science, October, 1896.*

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FAVUS-LIKE ERUPTION OF THE ORAL MUCOUS MEMBRANE CAUSED BY ASPERGILLUS NIGRESCENS. Dr. Winfield, Brooklyn, before same meeting, gave the history of a case which had been referred to him by Dr. Browning, who had had it under observation for some weeks. A small ulcer had first appeared on the middle line of the roof of the mouth, about half way between the incisors and the soft palate. It was supposed at first to be an ordinary canker sore, giving discomfort only when breadcrusts or other hard substances pressed against it. The patch increased

slowly in size and others formed in the neighborhood. Two weeks after its first appearance the patient consulted Dr. Browning, and, as the patch continued to enlarge, a course of antisyphilitics was given, but without good effect. It was then suspected that the inflammation was due to a local parasite, and bichlorid and other parasitocides were employed without avail. A drawing was shown, revealing a lumpy patch extending from just behind the incisors to within one-fourth of an inch of the soft palate. Cup-shaped elevations on the soft palate appeared on either side of the middle line. A firmly attached membrane, giving rise to hemorrhage when forcibly removed, covered the areas. The color of the recent deposit suggested the sulphur-colored scutula of favus; where it had remained undisturbed it was darker. A few minute ulcers were scattered over the larger patch. With low power the growth was recognized under the microscope as a fungus differing from the achorion. The mycelium network was composed of delicate fibers, bearing perpendicular fructifying hyphæ. Scattered over the field were a number of fruit receptacles and a few spores. The manner of fructifying showed that the fungus did not belong to the oidium, but to the ascomycetous genus. Cultures showed it to be *aspergillus nigrescens* which had caused the inflammation. Upon applying 25 per cent ethereal solution of pyrozone improvement was immediately noticed. The pseudo-membrane disappeared and new patches ceased forming. After seven weeks' treatment the patient was well.

Literature has failed to show a similar case, although many instances were recorded in which *aspergillus* has been found in the human ear. The spores were supposed to have been implanted in the mouth through the medium of cheese, strong and moldy varieties of which the patient was very fond of eating.—*Medical Record*, October, 1896.

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NEURO-SOCIOLOGICAL DATA. Dr. Arthur MacDonald, specialist in the Bureau of Education, Washington, D. C., has recently made some investigations that furnish interesting neuro-sociological data, printed in a recent number of the *Psychological Review*. The appended table exhibits these data in the most succinct and clearest form:

TABULAR STATEMENT GIVING QUANTITATIVE MEASUREMENTS OF SENSIBILITY IN PERSONS OF DIFFERENT AGES AND CLASSES OF SOCIETY.

No.	Classification of Individuals.	Number of persons.	Ages and average ages.	Average least sensibility to distance (locality) between two points on volar surface of wrists.		Average least sensibility to heat on volar sur- face of wrists.		Average least sensibility to pain (by pressure) on temporal muscles and on palm of hand.	
				r. wr l. wr.		r. wr l. wr.		right t.	left.
				3	4	5	6	7	8
				mm.	mm.	cent.	cent.	kilos.	kilos.
I	Women (highly educa- ted)	23	av. 38	17.3	16.2	2° .1	1° .7	1.253	1.224 (T. muscl.)
II	Young women (wealthy classes).....	11	un. 30	13.6	12.4	4.6	4.4	2.9	2.4 (hand)
III	Young men (wealthy classes).....	10	un. 30	12.4	12.7	4.4	3.7	4.7	4.2 (hand)
IV	Boston army of unemp.	35	av. 28	16.1	15.6			9.5	9.5 (hand)
V	Washington school chil- dren (boys).....	526	6-18	16.3	15.5	3.9	3.8		
VI	Washington school chil- dren (girls)	551	6-18	14.8	13.8	4.5	3.9		
VII	Boys (parents well-to- do).....	205	6-18	16.2	15.2	4.0	3.9		
VIII	Boys (parents poor)....	119	6-18	16.6	15.9	4.0	3.7		
IX	Girls (parents well-to- do).....	183	6-18	14.3	13.5	3.9	3.5		
X	Girls (parents poor)....	133	6-18	14.9	13.8	3.9	3.6		
XI	Boys, before puberty ...	318	6-14	15.7	14.9	3.9	3.6		
XII	Boys, after puberty.....	208	15-18	17.2	16.3	4.5	4.2		
XIII	Girls, before puberty...	186	6-12	14.5	13.8	4.8	3.8		
XIV	Girls, after puberty.....	362	13-18	15.1	14.0	4.3	4.0		
XV	Colored children, boys .	33	6-19	13.9	13.5	2.0	1.7		
XVI	Colored children, girls .	58	6-16	15.2	14.1	2.5	2.4		

Should these results be confirmed by experiments on larger numbers of individuals, the following statements would be probable:

Middle-aged women of the educated classes are much less acute in the sense of locality on wrist, but much more acute to heat than young women of the wealthy classes (Nos. I and II, cols. 2, 3, 4, 5, 6.)

Young men of the wealthy classes are much more sensitive to locality and pain than the men in the Boston army of the unemployed (Nos. III and IV, columns 3, 4, 7, 8).

Young women of the wealthy classes are much less sensitive to locality and heat, but much more sensitive to pain than young men of the wealthy classes (Nos. II and III, columns 3, 4, 5, 6, 7, 8). As to pain, it is true in general that women are more sensitive than men, as shown in a former investigation. But as remarked then, it does not necessarily follow that women cannot endure more pain than men.

Boys are more sensitive to locality and heat before puberty than after. Girls are more sensitive to locality before puberty, but their sensibility to heat is about the same before and after puberty (Nos. XI to XIV, columns 3, 4, 5, 6).

Colored boys are more sensitive to locality and heat than white boys. Colored girls are less sensitive to locality, but more sensitive to heat than white girls (Nos. VI and XVI, columns 3, 4, 5, 6). Colored boys are more sensitive to locality and heat than colored girls (Nos. XV and XVI, columns 3, 4, 5, 6).

The left wrist is more sensitive to locality, heat and pain than the right wrist; only one exception (No. III, columns 3, 4).

These measurements are among the first ever made on the nervous system of school children. Their *practical* value, aside from their scientific, is this: Any pupil 20 per cent above or below these averages for its age should be reported to the family physician; it is doubtful whether such a pupil should be allowed in school; if allowed, he should be separated from the others. There are too many bright pupils with weak bodies. The importance of such facts increases as other facts are discovered.—*Child-Study Monthly*, October, 1896.

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PECULIAR AFFECTION OF THE MUCOUS MEMBRANE OF THE LIPS AND MOUTH. Dr. J. A. Fordyce, New York, read before the American Dermatological Association a paper entitled as above, in which he reported a case of a peculiar mottling of the lips and mucous surface of the cheeks, more noticeable when the parts were put upon the stretch. The condition had existed for two years without subjective symptoms, but the patches had gradually increased in area. The microscope showed a degeneration of the protoplasm of the epithelial cells. The muciparous glands were not involved.

Dr. Morrow said it was an interesting point that the same con-

dition had been found in several members of the patient's family. The nature could be determined only by the microscope.

Dr. White had seen superficial changes suggestive of the case reported.

Dr. Bowen thought there might be a plugging of the glands by the process described, which would account for the yellowish or whitish bodies seen beneath the surface. He had seen bullæ followed by atrophy and attended with the formation of bodies similar to those by plugging up of glandular structures.—*Medical Record*, October, 1896.

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THE ORBICULARIS ORIS AND THE MUSCLES OF EXPRESSION. By W. C. Barrett, M.D., D.D.S., Buffalo, N. Y. Read before the American Dental Association, August 5, 1896. There are a thousand millions of people living upon the earth, and no two of them resemble each other so closely that they cannot be distinguished. The characteristic differences are mainly found in the facial features, and in them the diversities are produced, partially by modifications of the facial and cranial bones, but more especially by variations in the development of the facial muscles, the most expressive of which is the orbicularis oris.

It follows, then, that our principal means for the identification of our friends and acquaintances is in the special development and functional action of this, the most wonderful of all the muscles of the body. When we consider the marvelous diversity of the expressions which the human countenance can assume, when we remember that pleasure, grief, rage, scorn, love, indifference, pride, jealousy, devotion, elation, melancholy, fear, hate, hope, and a hundred other sentiments and passions, with all their modifications, can be clearly and unmistakably expressed by mere contractions and relaxations of these muscles, we begin to comprehend something of the amazing variety of the combinations that may be formed by their union. The more compound a set of muscles the greater the range of its mobility; usually, however, at the expense of its muscular power. Even the features of the stolid, unimpressionable, phlegmatic boor clearly present at times of excitement the workings of his uneducated, untrained mind. When we compare with this the language in which the muscles of the trained pantomimist speak, we get a glimpse of their capabilities.

Nor is it alone upon the voluntary muscular contractions that the actor relies for the portrayal of human emotions. He uses appliances for the mechanical distortion of them, that he may the more readily assume special expressions. It is well known that the tragedian and the comedian introduce material into the mouth for the distention of certain muscles, holding them in permanent distortion in their "make up," that by the action of certain other muscles in combination with them exaggerated expressions may be produced. An invisible hair or thread is used to draw up or down certain facial attachments, thus to produce some special combination. Men so disguise themselves by artificial means that they are not readily recognized by their friends. Criminals, by certain very simple surgical operations, so alter their whole expression that detectives are unable to identify them. Squint, or cross-eye, can be produced or obliterated almost at will. Slight permanent contractions of certain muscles can be induced by simple operative procedures that shall entirely change the expression of the whole face. We, as dentists, know the marvelous modifications that can be brought about through a change in the position of the teeth. We have witnessed the complete mutilation that has been caused by the insertion of an unskillfully constructed artificial denture. I could not, then, select a subject that should more directly appeal to those who are constantly engaged in working upon the human face than to present before them a brief study of one of these expressive organs.

The orbicularis oris is the most complicated and involved of the muscles of the human body, whether we consider it from an anatomical or functional aspect. It is commonly considered a sphincter, but it is very far removed from this class, in that none of its fibers are continuous about the cavity which it surrounds. It is not a simple muscle, but is made up by the intermingling and intercommunicating of a large number of facial muscles. In fact, the distinctive fibers of the orbicularis are comparatively few, passing only across the lips, and not around them. The compression of the mouth is not even produced as in the eye, in which the orbicularis palpebrarum passes nearly around. The mouth cannot be completely pursed up, as with a true sphincter, but it can be drawn together by the combined action of a considerable number of muscles. Its expressiveness is not produced by a simple muscular action, nor can any of the passions be portrayed by any one set

of fibers. The marvelous changes are brought about by combinations made possible through the intercommunication already referred to.

The orbicularis oris is the common meeting ground of all the muscles of facial expression. Fibers from each and every one of them communicate, either primarily or secondarily, with the true orbicular fibers. Even the muscular portion of such a distant one as the occipito-frontalis has its means of communication, and from the clavicle to the coronal suture there is a functional union of all the expressive muscles of the face and head. The mingling of the fibers of all these muscles makes the structure of the orbicularis very complex. Muscles like the depressors and the levators, the filaments of which are arranged at right angles to the margins of the lips, crossing it, give vertical fibers. Those of the buccinator, the risorius, etc., added to the longitudinal fibers of the orbicularis proper, furnish transverse filaments, while a third set run diagonally across, obliquely between the other bundles, from before backward, and from the skin to the internal mucous membrane.

The muscle, as a whole, may be divided into the internal or labial, and the external or facial portions, according to whether the layers are mainly composed of the fibers of the superficial or deep muscles; but no accurate line of demarkation can be drawn, because of the diagonal fibers that interlace. The deep portion has but a restricted attachment to the bone beneath, that of the upper lip having the naso-labial slips, which give the prominence that forms the two vertical ridges near its center, dropping down from the cartilage of the nose, and another in the incisive fossa, while that of the lower lip is merely attached at the incisive fossa on each side. The superficial part of the muscle has no bony attachment whatever, but is held in position by the diverging muscles of which it is composed. This gives extreme mobility to the whole mouth, the lack of bony attachment accentuating it, for if the superficial fibers are strongly contracted and the diagonal ones relaxed, the lips are protruded, while if the deeper layers and the oblique ones are contracted the lips are drawn against the teeth.

The buccinator belongs to the deeper layer, and its fibers decussating or crossing at the angles of the mouth make up a large part of the transverse portion of the orbicularis. It has its origin along the distant line of the alveolar process of both the upper and the

lower laws, and in the pterygo-maxillary ligament behind, many of the fibers from the upper part crossing and forming a part of the orbicularis below, while those of the inferior part cross to be inserted in the upper lip. These decussating fibers are attached to the alveolus as far forward as the margin of the canine fossa, and they should dominate the shape of any artificial denture at this point.

The levator anguli oris, the levator menti, and the quadratus menti, belong to the intermediate layer, while the levator labii proprius, the zygomaticus major and minor, the triangularis menti, the risorius, and the levator labii superioris alæque nasi, with the fibers of the platysma myoides, make up the superficial layer. But certain fibers of nearly all these muscles cross and, accompanied by portions of the deep fascia, penetrate even to bony attachments.

It is not, however, the anatomy of these muscles that so much interests us as their function, and I desire to indicate in what way the expression of the countenance may be affected by malpositions of the teeth, or by unskillful operations on the part of the dentist.

First let us consider the levator labii superioris alæque nasi. The action of this muscle is to raise and slightly evert the inner half of the lip, and at the same time to lift the wing of the nose, and it produces an expression of disgust. It is especially used in sneering. In certain instances in which the central incisors are especially prominent, while the laterals are retracted, we have that peculiarly impudent and deriding aspect that is sometimes called the "squirrel" or "rat-face." If an artificial plate be too prominent beneath it, there may be produced the vacant, idiotic look, induced by the compression of the oblique fibers of the orbicularis oris, and the consequent eversion of the labial edge.

A little nearer the angle of the lips and above the cuspid teeth, but upon the superficial labial surface, lies the levator labii proprius. The action of this muscle is quite complex. With the levator labii superioris alæque nasi it raises the lip, everts it somewhat, and gives a peculiar sneering expression to the countenance. The carnivora in snarling bring this muscle into play, and thus expose the cuspid teeth. In connection with the depressor anguli oris, or triangularis menti, and the orbicularis palpebrarum, it is especially used in crying. The closure of the eye by the contraction of the latter muscle assists in raising the lip, while the triangu-

laris menti draws the mouth into the shape of a parallelogram, and gives a peculiarly lugubrious expression to the face. If the cuspids be unduly prominent, or if a plate lifts the muscle too much, the consequence may be, when the other muscles are at rest, a permanent sneer. With the contraction of the orbicularis palpebrarum and the triangularis menti, the face has an expression of extreme sadness.

The buccinator as a muscle of expression acts secondarily. From the peculiar direction of its fibers, when it is in contraction, the muscles of the deep layer are pursed up at the corners of the mouth, while those of the more superficial layer are peculiarly puckered by the consequent drawing of the levator and depressor anguli oris; a deep wrinkle is seen at the angle, while the risorius is placed upon a stretch, and an insincere and mocking appearance is the result. This will be induced when an artificial denture is inserted that has no depression at the canine fossa. The superior decussating fibers of the buccinator are placed upon a stretch, and a peculiarly disagreeable expression thereby induced. The same abnormality of the natural denture, or the same improperly constructed artificial plate that thus unduly distends the buccinator, will act upon the levator anguli oris and intensify the disfigurement. This muscle raises the corner of the mouth, and at the same time draws it inward. When too much distended there must be a continued muscular effort on the part of the triangularis menti to keep the corners of the lips in place, and this results in a painfully strained appearance, and adds to the distortion.

The zygomatici, major and minor, are the muscles most used in smiling, as they draw the angle of the mouth upward and outward. When the zygomaticus major is strongly contracted, it draws together the tissue about the point of its origin, and causes a fullness in front of the malar bone. If now the orbicularis palpebrarum be contracted, the tissue between the origin of the zygomaticus and the outer canthus of the eye is peculiarly wrinkled, producing what are called "crow's feet," a disfigurement which ladies especially most earnestly desire to avoid. If both the zygomatics are placed upon a stretch by undue distention, the mouth is placed upon a perpetual broad grin. If, on the other hand, they are unduly relaxed, the triangularis menti draws down the corners of the mouth and gives the opposite expression.

The risorius has its origin in the masseter, and its action is to draw the corners of the mouth directly outward. It gets its name from the former supposition that it was the muscle of laughter, but all the late anatomists know that this was a mistake. When it is contracted it gives an expression of pain. This is the case in tetanus, and the appearance in that condition is hence called the "risus sardonicus." If the first molar in either the natural or an artificial denture be placed within or without the proper position, the risorius may be caused to give a very peculiar and painful expression.

The platysma myoides is not as much affected by the dentition as some of the other muscles. Yet there are few whose action is more complex. Arising as it does from the deep fascia of the upper part of the chest and neck, it is involved in all the muscular movements of the important pectoralis major, the deltoid, and the sterno-cleido-mastoid. Its long bundles of fibers continue to the border of the jaw, where some of them are inserted. But others cross the lower jaw, and, continuing beneath the triangularis and the quadratus menti, are lost in the orbicularis oris, while the fibers crossing the angle of the mouth are mingled with and lost in the fibers of the levator labii proprius and the levator labii superioris alæque nasi. Hence any unusual exertion of the pectorals and the deltoid exhibits itself in the face. In heavy lifting, the corners of the lip are drawn down, and even the wing of the nose depressed by the strain placed upon the platysma, through its origin in the fascia of the muscles of the arm and chest, and its connection with the orbicularis oris and the levator alæ nasi. It cannot, then, be lost sight of in arranging the teeth, and its action upon the orbicularis oris needs careful study by the artistic dentist.

The depressor anguli oris is of course affected by anything that unduly contracts the levator anguli oris and the zygomatics. If, on the other hand, these muscles are left too lax, the depressor, or the triangularis menti, draws the mouth out of position. If the lower teeth are too prominent, or if a lower artificial denture places these muscles upon a stretch, it may easily be seen that not only will the symmetry and proper expression of the lower lip be destroyed, but that the opposing muscles of the upper lip will draw that also out of place. Especially must the natural expression of the canine fossa be retained, that the triangularis menti may not be distorted, and so the natural expression be entirely lost.

A very disagreeable fullness of the lower lip may be induced if an artificial plate too much distends the quadratus menti, or the depressor labii inferioris, and the levator menti, or levator labii inferioris. If the latter, especially, be strained by undue fullness near the center of the lower lip, it induces a peculiarly haughty, supercilious expression, which may do the wearer of it great injustice. This appearance may be brought about by malposition of the teeth, irrespective of either the natural or the artificial alveolus. If, for instance, the lower edge of an inferior plate be too thick at the incisive fossa, the origin of the levator menti, the point of the chin will be disagreeably drawn up. If now the teeth be placed too far back, the natural fullness of the orbicularis is not preserved, and the decussating fibers of the buccinator and those of the platysma will draw in the margin of the lip, and a peculiarly dogged, obstinate expression will be the consequence.

If a plate be too full at the canine fossa of the upper jaw, the levator anguli oris is distended and the corner of the mouth is raised, while at the same time the descending fibers of the buccinator draw up the inferior angle of the mouth, the risorius is pulled out of position, and a half-sneering, half-weeping expression is seen. At the same time, the zygomatics may be relaxed by the lifting of the lip, and there will be a distortion of the tissues covering the malar bone. Hence, by an artificial denture that has an undue prominence at one point, every expression of the face may be changed, and not a muscle that is connected with the orbicularis oris remain at rest in its natural state.

It would be interesting at this point to take up the comparative muscular anatomy of different orders of animals, and determine the character of each as expressed in the face. There is a peculiar development of the muscles about the mouth of each one, and it is always indicative of their individual or class traits. In the Carnivora, for instance, the levators of the upper lip are largely developed. This gives them the peculiarly savage expression that is so threatening when the anger of the animal is aroused.

In the Rodentia, the prominence of the central incisors brings the levators proprius into prominence, and gives them the impudent, saucy expression that is characteristic of that order. In the Leporidae, or hares, this is modified by partial separation of the superior labial muscles, the so-called "hare-lip."

In the Ungulata, the absence of developed cuspids in many of the families of this order is partially compensated for by the peculiar arrangement of the six incisors, while the corners of the mouth are so far back that the angular muscles are partially inactive. Yet the arrangement is plainly observable in the characteristic expression, this order being, except in the case of certain sub-orders, timid and fearful. The presence or absence of the cuspid changes the whole expression, and the horse, which has canine teeth, may by close and experienced observers be distinguished from the mare, which has none. But this study, although intensely interesting, is foreign to the objects of this paper, and I will not enlarge upon it. I could not, however, resist the impulse to advert to it.

I should be glad also to take up at greater length the question of functional anatomy, but time forbids. I can but superficially present my subject at best. As much time should be spent with each of the muscles whose action is in any way connected with that of the orbicularis oris, if we would thoroughly comprehend the matter. The dentist who constructs artificial teeth has in his keeping the making or marring of the whole human face. If he is not an anatomist, and if at the same time he has no artistic ideas, and if he does not as carefully as the sculptor study the face which he is endeavoring to idealize, he is unworthy a place among artistic dentists. When one sees the perverted, distorted, deformed features of some one who might have a pleasant expression; when children, perhaps, look upon a mother from whose hallowed image all the sweetness, and love, and patience, and tenderness have been eliminated by the cursed work of some pretender to knowledge of which he is in utter ignorance; when we reflect upon the blasted lives of young women whose future perhaps is wrecked through their being made repulsive to one who should have been attracted; when we observe upon the streets, in society, at home and abroad, the horrible caricatures of the human face divine that are the result of the reprehensible ignorance of pretended dentists, one wonders whether after all our profession as a whole brings more of good than evil upon mankind. When we think of what it might be, and of what it is, we are led to weep at the present status of the art of dentistry, and are consoled only by the remembrance that amid all the Cheap Johns who are violently struggling for a bare existence there are a few who do honor to their profession by conscientious and intelligent work, and

who are rewarded, as such men always are, not only with the plaudits of a judicious world, but by the more substantial benefits of well-paid labors.—*Dental Cosmos, October, 1896.*

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INTERESTING EXPERIENCE. By A. Rose, L.D.S., Peterborough, Ont. I noticed in a recent number of this journal an experience of a peculiar nature in connection with an aluminum crown set with amalgam. The circumstances there described so nearly accorded with an experience of my own that I feel encouraged to report mine also. Having been requested by a lady patient to do something to save the root of a lower right second bicuspid from the necessity of extraction, and as quickly and cheaply as possible, I thought of making a crown of a piece of aluminum tubing about the diameter of the root, trimmed and fitted to it and filled, and cusps built on with amalgam. This I did in a short time, and sent the patient away much pleased with my efforts to replace her lost grinder. You may imagine my surprise when the lady returned next morning with a few scraps of something that looked like acid-eaten iron, about the shape of the piece of tubing used to form the crown, but ready to crumble to pieces in her hand. She said a few minutes after she left the office she felt it getting hot and a boiling sensation about the gum, and then the filling seemed to boil and crumble away out of the crown. I concluded that some chemical action took place on the union of amalgam and aluminum in the saliva around them, but do not yet think I clearly understand the reason for the occurrence. I set to work again and with tubing, hammer and anvil soon fitted another band to the root, but this time filled it with oxy-phosphat, and find it giving good service and no apparent inclination to give way at any point. Can any one give a satisfactory explanation of the destructive agency in the first case? If so, I, for one, will be pleased to consider it, and thank him for his trouble.—*Dominion Dental Journal, October, 1896.*

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NOTE UPON THE INVESTIGATION OF URIC ACID IN SALIVARY TARTAR IN THE COURSE OF PYORRHEA ALVEOLARIS (ARTHRO-DENTAL INFECTIOUS GINGIVITIS). By Dr. Galippe. Like all grave maladies whose etiology is imperfectly understood and whose treatment is slow and difficult, pyorrhea alveolaris has received a considerable number of appella-

tions, and its etiology has been attributed to the most diverse pathological influences.

I was not a little surprised on reading, in 1894, in an American selection, that the etiology of pyorrhea alveolaris must be always attributed to gout. The author of this assertion based himself upon the invariable presence of uric acid or of urates in salivary tartar, as well as in the deposits forming incrustation at the extremity of teeth which have dropped out, or have been extracted in the course of this disease.

I have made it my task to examine this assertion, with the help of two of my collaborators, MM. Brun et Gaillard. Starting with this fact, that if uric acid really exists in salivary tartar, or at the extremities of the roots, it ought to be found there in a relatively feeble quantity, our researches were carried out with the most minute care and the greatest precaution. The American author does not say by what means he has been able to verify the presence of the uric acid. We have not, perhaps, followed the same path in our investigations as he took. We have adopted the most common-sense classic methods, those which are ordinarily followed when the presence of uric acid has to be determined in concretions.

These methods are of two kinds: I. If we treat the concretions inclosing the finely pulverized uric acid by azotic acid, then evaporate the excess of uric acid, and add to the residue a drop of diluted liquid ammonia, we obtain immediately the rose-purple coloration of murexide. II. If we treat the same concretions by an alkaline solution of potassium, the uric acid becomes dissolved, giving place to a formation of soluble urate of potassium. To the filtered liquid is added hydrochloric acid, which produces a precipitate of uric acid, easily to be recognized on examination with the microscope.

1. With these methods we first made some trials upon saliva; our results were negative. 2. Upon ten samples of fresh tartar we also obtained negative results. 3. Upon forty teeth, studied separately, and chosen from patients affected with pyorrhea alveolaris, the tartar was first detached and analyzed, thereupon the extremities of the roots were sawed off and examined after pulverization. All the results were negative.

The salivary tartar taken from several series of teeth (9, 6 and 4) did not reveal the presence of uric acid; the combined roots of these same series did not afford better results.

In the face of these persistent negative results we asked ourselves, after the first three or four trials, if the presence of the organic and mineral matter in the salivary tartar did not prevent the reactions. We therefore instituted experiments of control, which were subsequently made after each examination of tartar or of root. 1. To saliva we added extremely weak quantities of uric acid, and these infinitesimal proportions gave us very good reactions. 2. The same very feeble quantities of uric acid were added to the fresh salivary tartar, also to the dry salivary tartar, and likewise to the finely pulverized extremities of the roots of the teeth. In all the cases we were able to demonstrate clearly the presence of the added uric acid.

We therefore believe that we are right in concluding: 1. That the experiments were made under conditions and with sufficient care to reveal the presence of even very small quantities of uric acid. 2. That, if we have not demonstrated the presence of this acid, either in the saliva or in the fresh and dry tartar, or in the extremities of the roots of the teeth, it is because there was not the least trace present in the samples we examined, or because it was not possible to disclose it by the methods which we employed.

We accept the similarity which it has been sought to establish between the salivary concretions and the urinary calculus. The etiology is the same, and in the one case as in the other we have before us a microbial process. It is, however, pushing the resemblance too far to say that the uric acid is to be found in all the concretions.

The chemical composition of salivary tartar closely approaches to these calcareous concretions, which are found in all the osseous parts of the body and in the bladder, every time that a process of the purely parasitical order comes into action.

It seems to us that the exclusively gouty origin of pyorrhea alveolaris ought not to be accepted, although it may have been established for a long time that the arthritics and rheumatics offer a predisposed field for the development of this disease, in which, as we have demonstrated with M. Malassez, the infectious element plays such a preponderating part.

After a decade the infectious character attributed by us to pyorrhea alveolaris comes back to us from America as a discovery, without the least mention being made of the researches of M. Malassez and my own. This is too much in the order of things for us

to think of complaining.—*Journal des Connaissances Medicales*, quoted in *L'Odontologie*.

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USE OF THE ALCOHOL LAMP. By W. H. Brown, D.D.S., Nashville, Tenn. Impure alcohol is not, by any means, the only thing which causes trouble during the process of making contour fillings, yet it is true that impure alcohol is detrimental to good gold work. By following the instructions given below, I believe you will have less trouble with the lamp.

First, see that your lamp is perfectly clean, both inside and around the top of burner. Be sure there is no wax or any kind of chemical dropped from your instruments and lodged on or around the wick. Next see that the wick is freshly trimmed and no crust left from previous burning. After you are satisfied that your lamp is perfectly clean, inside and out, fill up with pure alcohol, and never attempt to work with a half filled lamp, for by so doing the blaze will consume so much wick, causing a certain amount of smoke, which renders the blaze unfit for annealing purposes the same as impure alcohol.

Another thing which should not be overlooked is, after lighting your lamp do not use the blaze too soon; give it time to heat and burn off all impurities and become a blue blaze before annealing your gold. While waiting for this it is a good idea to select the pluggers you expect to employ and warm them slightly at the points. This not only prevents the cold instrument from chilling the gold, but burns off all the impurities and foreign substance that may have collected in the serrations.

Always be careful not to blow your breath against the filling or use the chip blower at any time during the operation. Either one will cause a dampness which will prevent the next piece of gold from adhering properly.—*Ohio Dental Journal*, October, 1896.

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NODULE ON APEX OF ROOT. By H. L. Ambler, M.D., D.D.S., Cleveland, Ohio. Read before American Dental Association, August, 1896. A lady, aged about thirty, presented for treatment of a chronic abscess of right superior lateral incisor. Upon examination with a probe it was found that the labial wall of bone at the apex of the root had been destroyed. With the intention of scraping the apex and breaking up the sac, a small right-angled

scoop was introduced and passed easily over and around the apex. Upon withdrawing it a small nodule of dentine or enamel about the size of an ordinary pinhead was brought away. The abscess was treated with pyrozone four times at intervals of three days, when the discharge ceased. Evidently the pulp had been dead for a long time, and the canal filled, as there were large mesial and distal fillings. The case was lost sight of for a year, and in the meantime she had this lateral, and also the right central, which was badly carious, extracted, and is now wearing an artificial denture.

The special interest attached to the case is the fact of finding a nodule at the *apex* of a root, especially of a *single-rooted* tooth.

Enamel nodules are small excrescences, apparently consisting of enamel, occasionally met with upon the roots of teeth. They are generally found upon multiple-rooted teeth, situated a little below the neck and often at the junction of the roots. On section they are found to consist of a cone of dentine covered with a rather thick layer of enamel, and often connected with the crown by enamel. Wedl says that "these nodules are the result of localized continuations of the development of the enamel between the already developed basal portion of the roots, and are produced by the strip of the enamel organ which has persisted longer than the rest." Smale shows the cut of one of these nodules on the apex of a *molar* root, and says they may be accounted for by a budding from the tissues concerned in the process of the formation of the tooth. Tomes shows a cut of a nodule situated on the *neck* of a *single-rooted* superior cuspid.—*Ohio Dental Journal*, October, 1896.

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EDISON CURRENT IN CATAPHORESIS. By L. E. Custer, B.S., D.D.S., Dayton, O. In a former paper on cataphoresis read before the Mississippi Valley Dental Society, it was stated that the 110 volt Edison current was as good for cataphoric purposes as a battery current, and it was recommended on account of the convenience. That statement was made from the practical experience in the use of the current as supplied in Dayton, O. Since that time the writer has had occasion to operate with a variety of commercial currents throughout the country. In Marshalltown, Iowa, the 500 volt current was used, but in all the other instances the 110 volt Edison. The experience with some of the currents was so different

from that at Dayton that I was at a loss for a satisfactory explanation. In some there was so much pain in the application of the current that the operation could not be called a success so far as being painless was concerned. When the appliances were perfectly quiet the patient would from time to time experience sudden and severe shocks of pain, much as if the current had been broken.

It was also shown in the paper that to produce cataphoresis painlessly the current pressure, when supplied by either a dynamo or battery, must be steadily maintained. It will not do to suddenly raise or lower the voltage on the main of the street current. Neither is it allowable to cut in or out a cell or a number of cells of a battery. By my experience with the various currents I was led to suspect that in those instances where there was this periodic pain to the patient there must be a sudden and wide variation in the voltage, although this did not show itself upon the voltmeter by more than a slight movement of the index finger. Subsequent observation and experimentation has practically substantiated the above belief, and I feel safe in saying that in those instances where operators are using the 110 volt current with intermittent pain to the patient, the anode being held quiet, that it is due to a fluctuation in the pressure of the main current. The fluctuation is usually a lowering of the voltage and so quickly done that it is not noticeable on the ordinary voltmeters in use. It is not a drop of a few volts but of quite a number, possibly of twenty or thirty at times.

The Edison constant current, the most practical form of commercial current to use for cataphoresis, is furnished us at a pressure of about 110 volts. This current, as is well known, is produced by the rotation of an armature between the poles of an electro-magnet. In order to maintain 110 volts the armature must rotate at a given speed, the armature must have a certain number of windings and there must be a certain magnetic flux. If any of the above three conditions should vary there would be a variation in the voltage of the outgoing current. It is by means of the last named that the voltage is most commonly controlled, or rather maintained, because it can be done by means of the rheostat. It is not practical to vary the speed of the engine, nor is it practical to change the windings of the dynamo, but the magnetism of the field can be easily varied by an instrument in common use, the rheostat. In a large plant where the manufacture and consumption of current is large, as for instance

a city plant, where a number of dynamos are feeding into common mains and where the output is always large, the cutting in or out of current for a building, or perhaps for a whole square, is scarcely noticeable, and the average voltage is easily and carefully maintained, whereas in small plants which supply but a building, or but a few at most, often with imperfect regulators and inefficient attendance, the variation in voltage is much more marked. The voltage of a city plant may vary 5 or 8 volts during the day, but this variation has been going on very gradually. But in the smaller plants the variation comes on instantly.

When a dynamo has once been placed in operation, its armature is expected to revolve at a certain speed at all times in order to produce and maintain a steady voltage. An increase in the armature revolutions raises the voltage and a decrease lowers the voltage. It is necessary to increase the belt pull on the armature as the output of current is increased. It is not simply a matter of revolving the weight of the armature on its axis against the air friction and the friction of its bearings, but as the load or output increases magnetism also increases and the armature becomes a dead weight, like revolving a fan in a vessel of water, and as the output still further increases the water theoretically begins to thicken. Now this is a dead weight and if the belt pull were to suddenly cease, the armature, whose momentum is neutralized by the magnetism, would stop. If it would not entirely stop, it would at least lessen its speed very considerably. This all occurs so quickly that the eye cannot perceive it and the ordinary voltmeter index has not had time to record it. All that is noticeable to the eye is a slight movement of the index finger. Now if this current were used for cataphoresis at the time of this sudden drop of the voltage, which is not measured on the meter, it is very distinctly felt by the patient, because it would be practically the same thing as lifting the anode from the tooth. In a large plant where a number of dynamos are feeding into the same lines, the slipping of a belt on one is scarcely noticeable, but in a small plant this is certainly the case.

A frequent cause of the variation of voltage in small plants is that the engines and dynamos are often too small for the work put upon them. No engine can run smoothly when it is always put to its highest limit. It is the one which has reserve that can be regulated to meet the varying demands. A still less satisfactory source,

so far as steady pressure is concerned, is the gas engine. While this is especially adapted for small plants, the smaller the engine the more unsteady is the electrical output.

Another cause of variation in voltage is found where the dentist does not get his current direct from the main line or is quite near some person who is using current from the same wires periodically. In many large buildings the wires enter the basement and ramify throughout the entire structure, giving off branches to each floor and these in turn to the different suites. Perhaps the elevators are operated from the same wires. It is a commonly observed fact that if a lamp is steadily burning and another near by be turned on, if the conductors are small, the first lamp is seen to slightly dim. The same thing occurs when the operator is producing cataphoresis and a neighbor turns on or shuts off current for his engine, lamp or oven.

The current used for lighting is always consumed at a steady rate and mostly at night, but that for motors is periodic, and it is unfortunate that this is during the daytime and when the dentist operates his cataphoric appliance. For this reason it is also important that the dentist secure his current from main lines if possible.

Occasionally the Edison wires are crossed by the trolley. If there are no grounds on the dentist's line, nothing further than a small raise in the voltage will be noticeable and but a slight shock is felt by the patient, but should his wires be in contact with a water or gas pipe the results would be more serious. On a well-kept system the heavy voltage is immediately dissipated in the many outlets and nothing serious will result.

The practical conclusions to be drawn are these. The 110 volt Edison current may be used satisfactorily and with as good results as a battery current where it is furnished by a well equipped and not overloaded plant. The dentist should connect direct to the main line whenever possible and not use current for other purposes while producing cataphoresis. He should not be on the same circuit with large motors which operate intermittently and should see that his wiring is perfectly insulated and not in danger of a ground.—*Ohio Dental Journal, October, 1896.*

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COFFEE AS A DESTROYER OF MICROBES. Recently Mr. Luderitz has published his experiments with coffee relative to

dietetic or food value; he has also tested its behavior toward pathogenic and non-pathogenic bacteria. He reports that he found all the bacteria experimented on to be materially retarded in their development in nutritive gelatine by relatively small quantities of aqueous infusion of coffee (10 g. coffee to 90 g. water); but the power of resistance manifested by the different species varied. Caffein seemed to possess some antibacterial power, but it was so slight that its influence in the action of infusion must be inconsiderable. It is rather to the empyreumatic substances formed in the roasting of the coffee, which have been termed collectively "caffeon," that Mr. Luderitz attributed the essential antibacterial action. In further commenting on this power of coffee he notes that fresh raw meat, inclosed in the powder of roasted coffee, can be dried without the least appearance of putridity. The facts here adduced are of interest in connection with the experience that finely powdered coffee mixed with iodoform destroys the nauseous odor of that drug, and does so without abridging the aseptivity of iodoform.—Translated by Dr. B. J. Cigrand from *Pharmaceutisches Centralblatt*.

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STATISTICS CONCERNING DENTAL CYSTS. By Dr. Julius Witzel, dental surgeon at the University of Marburg. In the following record of dental cysts I have made observations on 105 cases, which give the following results:

Between the ages of	8-12 years	4 cases
"	"	"
"	"	"
"	13-20	14
"	"	"
"	21-30	51
"	"	"
"	31-40	23
"	"	"
"	41-50	8
"	"	"
"	51-60	3
"	"	"
"	61-70	2

Of these 105 cases I found:

In males	59 cases or	56.2 per cent
In females	46 cases or	43.8 "
Superior maxilla	{ males	44
	{ females	32
Inferior maxilla	{ males	15
	{ females	14

This shows 72.4 per cent in upper jaw and 27.6 per cent in lower jaw.

The following tells the condition of the dental organs having the cyst:

Decayed teeth with gangrenous pulp, 96 cases 91.4 per cent
Teeth otherwise injured 9 cases 8.6 per cent

The foregoing statistics demonstrate that the greater number of dental cysts occur between the ages of 21 and 30, and further, that the older the patient the less likelihood of being affected with this form of dental trouble.

With reference to the sex of the patient the above cases would show that the cysts are more likely and frequent among men than women; however, the difference in the percentage is but slight.

That there are a greater number of cysts in the upper jaw than in the lower, can possibly be explained as resulting from the fact that the hollow superior maxilla affords a more exposed condition to such teeth as penetrate the antrum, while the solid or compact osseous structure of the lower jaw acts as a safeguard.

It is worthy of notice in observing the 96 cases, that 52 cysts were on the right side of the face, while only 44 appeared on the left side.—Translated by Dr. B. J. Cigrand from *Deutsche Monatschrift fuer Zahnheilkunde*, October, 1896.

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CATAPHORESIS IN DENTAL PRACTICE. By Dr. E. Grosheintz, Basel. The word cataphoresis (from the Greek, meaning to carry away or wash along) suggests to our mind a picture of a river carrying with it floating material. The physicist defines cataphoresis as that property or power of electricity to conduct or exchange from the positive to the negative pole a fluid through a porous body. If we conduct a constant current through a tissue or body we can experience the fluid passing from the positive pole (anode) in the direction of the negative pole (kathode); and this phenomenon we term cataphoresis.

The physicians understand by the word the forcing of medicine into the body by means of a current of electricity. Prof. W. J. Morton has employed a very satisfactory expression for this process in this phrase: "Electric—medicamental—diffusion." Cataphoresis is a purely mechanical process and in this particular differs from the chemical process accompanying electrolysis. And it is possible for electrolysis and cataphoresis to act in conjunction, and it is difficult,

or rather impossible, to determine just how great a function each exercises.

The earliest instance in which cataphoresis was employed in the practice of medicine seems to have been in France. As early as 1833 the introduction of tinct. of iodine was practiced, and for upwards of twenty years the French specialists recommended it as productive of good results in the treatment of several internal disorders. The learned scientists of the several continents have from time to time studiously occupied themselves in the investigation of cataphoretic experiments without establishing for it a specific purpose in general practice. Only recently the Americans have, under the great electrician, Edison, taken up the oft neglected study of electricity, and now promise many positive results.

Dr. William J. Morton, professor of nervous diseases and electro-therapeutics in New York, is the son of the renowned Dr. Morton, the discoverer of etherial anesthesia; and the subject of cataphoresis is receiving the special research of the young Dr. Morton. He is studying it relative to its worth in the science of dental surgery. We are indebted to him for having substituted cataphoretic anesthesia in the place of cocaine; and his success with guaiacol-cocaine is deserving of considerable notice. On May 12, 1892, Dr. Westlake, of Elizabeth, New York, in an essay before the State Dental Society said: "I am convinced that the problem of obtunding sensitive dentine will be solved through the agency of the electro-medication or cataphoresis." I have experimented considerably with electricity, relative to discovering the latent properties which might prove of service to our profession, and I am certain of valuable aid coming from its further employment. I use it in bleaching teeth; in disinfecting root-canals; in painless extirpation of the pulp; in extracting teeth; in the treatment of pericementitis, and in alveolar pyorrhea. —Translated by Dr. B. J. Cigrand from *Schweizerische Vierteljahrsschrift fuer Zahnheilkunde*, September, 1896.

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PATHOLOGY AND THERAPEUTICS OF DEAD TEETH.

By Dr. G. H. Claude. Read at Union Meeting of Maryland State Dental Association and Washington City Dental Society. The author defined a tooth as dead when the pulp had been destroyed. Respecting the morbid anatomy of such cases, he said: When a pulp dies, the pericementum—that portion of the periosteum at the root

apex, reflected upon the root from that lining the alveolus—becomes congested and, unless early interference is had, suppuration supervenes. First, the pericementum becomes distended and partially detached from the root, pus generates in the sac thus formed and becomes a foreign element, which must be thrown off, and, if influenced by gravity only, would discharge by the shortest route; but it is directed therefrom by the anatomical structure of the environments. Pus once formed and the periosteal sac containing it broken, it must then find its way through the bony structure until it reaches the periosteum covering the outside of the maxilla, when it becomes again arrested by this tough, elastic membrane, causing much distension and inflammation of the surrounding tissues. The pressure of the constantly increasing generation of gas, from decomposition of the pulp and pus-secretion from the sac thus formed, causes a thinning of the soft structures until an opening is established, when the trouble subsides in a few days, leaving a permanent fistula unless interfered with.

Whatever the treatment—extraction, which is seldom necessary, or cure by other means—morbid changes have already taken place which will remain through life. The periosteum becomes thickened, the cementum nodular, if inflammation has preceded the death of the pulp, and the bony structure has become somewhat thickened.

The color of a tooth is not altered by the death of the pulp if the debris is all removed and it is properly filled before the discoloration takes place. It remains a useful and ornamental part of the human organism, and if anything it is more adherent and firmly fixed in its socket than if the pulp were alive.

The most prominent symptom of the partial death or approaching death of the pulp is a not well-localized, intense pain on the affected side of the jaw, described often as neuralgia, the pain intermittent in character, sometimes described as thumping or hammering, increased in intensity when in the reclining position.

It is often difficult to determine in the early stages the tooth thus affected, and most frequently the pain is described by the patient to be in some other tooth than the one causing the trouble. I was called to see a patient a short time since who had a dentist to extract the upper second bicuspid, which was perfectly sound, only to get a few moments' relief, probably from loss of blood. Shortly afterward the attack returned with renewed violence. He sent for

his physician and was laid up in bed, resting only moments at a time while under the influence of anodynes. After being under anodyne and tonic treatment for three days he sent for me. Upon examination I could see no fillings or cavities in his teeth. The upper right lateral incisor appeared a little dull in color, and had a slight fracture of enamel near the cutting-edge. A year previous to this I had examined his teeth, and he reminded me that I had told him then it looked like a dead tooth. On feeling in the roof of his mouth just above the root of this tooth, I found it exquisitely sensitive to pressure, and detected some distension, softening, and fluctuation. I brought my dental engine to his house and drilled through the palatal surface into the pulp-canal, and pus flowed freely through the openings. His relief was immediate. After two weeks, when the discharge had ceased, I filled the root, with no subsequent trouble. This pulp was devitalized by a blow when he was a child, and, judging from the size of the apical foramen, before the tooth was thoroughly developed.

Cases of this sort are of too frequent occurrence where good teeth are extracted on the demand of the patient, without the dentist using proper discrimination.

When in doubt a delay of a few days or hours may establish beyond peradventure the diagnosis, and teeth may be saved which otherwise are ruthlessly extracted. Patients will nearly always consent to put up with the suffering for a time if alleviated by remedies. A careful examination will always raise a suspicion of the offending tooth, and often settle the diagnosis from the pain on percussion, looseness, insensibility at cervical margin, and response sometimes to heat and cold. A partially dead pulp will respond to heat and cold even more actively than a tooth in a normal condition. There may be no pain on cold being applied, but the pain will be intensified by the application of heat. This is a very important point in a discriminating diagnosis.

The pulp once dead, the cavity should be made large enough to afford access to all of the roots, and they should be cleaned out thoroughly to the apex, disinfected and filled.

His method of filling the pulp-canal is that described by Dr. N. S. Shields—filling with gold or other substance that will not absorb moisture.

Discussion. Dr. L. Ashley Faught was always sorry to hear

these teeth called dead teeth. They are pulpless teeth, but in a state of semi-vitality; they are not dead.

Dr. W. A. Montell asked Dr. Faught if he would describe a tooth as pulpless when it contained a putrescent pulp.

Dr. Faught said what we describe as the pulp of a tooth is a vital organ; when it is putrescent it is not the pulp.

Dr. T. S. Waters spoke of the value of an electric lamp in diagnosing a dead pulp. When the light is made to pass through a tooth with a dead pulp the tooth will appear opaque; if the pulp is alive it will be clear. Reflecting light from a mirror outside the mouth upon a mirror inside, and from this back through the tooth, will answer almost as well as an electric lamp for the purpose.—*Dental Cosmos*, October, 1896.

ANOTHER SOURCE OF INFECTION.—It is well known among oculists that the opera-glasses, which may be hired in most theaters, frequently become the medium for spreading very serious eye diseases.—*Pop. Science News*.

PROGRESS.—“Medical science has made such progress,” said the doctor, when speaking of his profession, “that it is almost impossible for anybody to be buried alive now.” Then he wondered why everybody laughed.—*Boston Courier*.

AMERICAN DENTISTS NOT WANTED IN GERMANY.—A dentist was recently arrested and fined in Berlin, for displaying upon the door of his office a plate describing him as a doctor of dentistry, with a diploma granted by an American dental college. The court held that it was against the law for him to use a foreign title in practice in Germany.—*Medical Record*.

NEW LOCAL ANESTHETIC.—An excellent local anesthetic, the effect of which lasts about five minutes, is as follows:

Chloroform.....	10 parts
Ether.....	15 “
Menthol.....	1 “

Apply as a spray to the surface, carefully guarding the nostrils from its fumes.—*Zahnärztliches Wochenblatt*.

FOREIGN DENTISTS IN HUNGARY.—It has for a long time been a disputed question whether dentists who have obtained dental diplomas abroad should be permitted to practice in Hungary. Considering that only qualified medical men are allowed to practice dentistry in Hungary, and that there is no special examining board for dentistry in this country, the government has declared that for the future a license granted in another country will be valid only if its possessor is a qualified medical man who acquired his diploma of M. D. in one of those universities which are recognized in Hungary.—*The Lancet*.

Letters.

A WRONG RIGHTED.

NEW YORK, November 5, 1896.

To the Editor of the Digest,

DEAR SIR:—Although I am 82 years of age, I am not so old as to be indifferent about my reputation. In the October issue of your journal there appears a letter signed "New York" which does me great injustice. The writer says, in speaking of the discovery of anesthesia: "It looks as if Dr. Colton were trying to claim the whole credit because he 'held the gas-bag.' " This is entirely unfounded, for in all that I have ever said or written I have attributed the honor of the discovery of anesthesia to Horace Wells.

In the Philadelphia *Medical and Surgical Reporter* of January 23, 1864, you will find this from my pen: "No one, I think, who has taken pains to examine the subject, can doubt that the honor of the discovery of anesthesia belongs to the late Horace Wells, of Hartford, Conn." In view of this and many other similar statements, no one can accuse me of trying to claim all the credit, although giving the gas and producing the first condition of anesthesia is quite as important as pulling the tooth.

Now the facts are as follows: Dr. Wells made his discovery at one of my exhibitions of the gas on December 10, 1844. The next day, at the request of Wells, I gave him the gas and Dr. Riggs extracted his tooth. I instructed him (Wells) how to make the gas at his request, and after using it in his dental practice during all of 1845, he went to Europe. During his absence Dr. Morton obtained a patent for the discovery of the anesthetic effects of ether and, after Dr. Wells' death (January 24, 1848), he set up the claim that nitrous oxid gas was *no anesthetic at all*. This became the belief of the whole world for *seventeen* years, from 1845 to June, 1863, when I revived the use of the gas and demonstrated that it *was* an anesthetic. This vindicated the claim of Dr. Wells as the discoverer of anesthesia.

I think I am entitled to some little honor in this revival, for had it not been for it we might not have heard of gas again to this day and Dr. Wells would have been forgotten. Not until after this revival did the medical journals take up the subject and prove that Wells discovered anesthesia. All the honor I have ever claimed

was, that I was the occasion of the discovery and I produced the first anesthetic condition for a surgical operation.

At the great celebration in Philadelphia—the fiftieth anniversary of the discovery—in honor of Horace Wells, on December 11, 1894, Professor Garretson, the chairman, did me the honor to say: “If there had been no Colton there would have been no Wells.” In a volume on “Modern Anesthesia,” written by the Hon. Truman Smith, United States senator from Connecticut, I find the following: “By far the most prominent of the operators with the element has been and is Dr. G. Q. Colton. Indeed, to this gentleman alone are we indebted for its introduction into practice after a suspension of many years, and for making its virtue and efficiency very generally known throughout the country. In this he has not only subserved in a high degree the cause of humanity, but he has placed the claims of Dr. Wells as the discoverer of the principle, and as a successful practitioner of modern anesthesia, on a basis which cannot be shaken. His efforts have been characterized with matchless vigor and perseverance, and he is entitled to the more honor for ascribing, as he uniformly has, all the merits of this great discovery to Dr. Wells, claiming only for himself the credit of reviving and then vindicating the practice of that unfortunate character.”

Yours etc.,

G. Q. COLTON.

NEW YORK LETTER.

NEW YORK, November 20, 1896.

To the Editor of the Digest,

MR. EDITOR:—We have seen a very worthy compendium of historical facts by Dr. James McManus, of Hartford, Conn. The number is limited to 200. He has evidently given much labor to the work, and the facts concerning the history of the discovery of anesthesia are very wholesome and assuring. We note several things confirming what we read in our paper before the California State Dental Association in 1895; facts which have not before been given to the profession. It is remarkable also, as shown by Dr. McManus, how many dentists, of more or less note, have been identified with the State of Connecticut, either by nativity or practice.

There is fair prospect of a lively time in editorials—four of them already in the field and speaking sharply. We would like to be an

editor just long enough to reveal some facts which have only been hinted at.

Politics, yes, the woods are full of them, and we cannot predict any helpful change for the better. Nothing but the changed morals of mankind can possibly bring about any improvement, and this is not possible, for there is nothing in the Adamic nature with which to begin. A life that has in it no destructiveness must originate from the source which is indestructible. The tendency of man's nature is selfish; the pendulum will continue to swing from side to side, but the golden mean between cannot be obtained by man. Let everyone read the *International's* editorials on dental legislation; more politics. We smile to think how innocently our friend Barrett came into the presidential chair of the American.

The *New York Journal*, a Bryan organ, now comes out with a full length portrait of Mark Hanna and calls him "the smartest political manager of the world." We would like to publish a portrait of our "Mark Hanna" and give him the same title, then after the January meeting of the N. Y. Odontological Society all who are fortunate enough to be present will cordially echo, "So say we all of us." There is going to be more histology to the "acher" than has ever been seen in New York, and the Odontos are to have the credit. Demonstration settles it.

There are many dentists who would like to see their figures full length and billed just what they are. Our greatest diplomat; who doesn't know who he is? Our richest dentist; all would like to know who he is. Our greatest inventor; all know where he lives. Our best looking member; where shall we find him? Our best writer; we will all see him soon, and our most learned microscopist. We must not forget one man who can put railroad magnets in his pocket and run the train himself. This is an age which is doing such things, and a dental journal which would follow suit might make a hit.

Disturbed Dentition, not the cause of the "Massacre of the Innocents," was before the First District Society at the November meeting, which was one of unusual interest. Two medical gentlemen ably presented the subject. "Malnutrition" is coming to the front as the first cause. We wonder if men think what brought about the malnutrition. Dr. M. L. Rhein is making some pertinent remarks; he gave his best talk before the society on this subject. Listen! The

Bridge Patent Defeated. Now hold up Dr. Crouse's arms financially. The recent meeting and clinic of the Odontological were of such interest that they merit an extra notice. Dr. Bonwill demonstrated his method of placing amalgam, a method that is emphasized by Mr. Tomes, of London, as worthy of marked attention by our whole profession. Dr. Gardiner's exhibition of his delicate and exquisite method of placing heavy rolled gold with the electric mallet was extremely gratifying to all lovers of humane operating—not too often manifested.

Dr. Cryer, Oral Surgeon from the Philadelphia Dental College, was present and showed with pride his perfected surgical engine. Although there was a little bringing in of previous introduction of the value of the dental engine as applied to major operations in surgery, yet our beloved Garretson gave all credit to Dr. Bonwill. Dr. Cryer performed several operations on the cadaver after his paper in the evening session, and these, together with his engine, won the admiration of several of the "Greater New York" surgeons—Prof Weir and others.

Let us be a little more careful over our contributions to surgery and see that they are put on record in the preserved archives at Washington.

Cordially,

NEW YORK.

A SPECIALIST.—The Wife: "Isn't that your eye doctor?" The Husband: "I thought so until he sent in his bill. He's a skin specialist."—*Harper's Weekly*.

SCURVY.—Dr. Cheney says that a "black eye" coming on in an infant without traumatism, and perhaps repeated several times, can rarely be due to anything else but scurvy.—*Medical News*, February 29, 1896.

A NEW INFALLIBLE TOOTHACHE CURE.—A philanthropic correspondent to a contemporary North of the Tweed can no longer keep his panacea locked up in his own bosom, as he has never known it to fail. For the benefit of humanity he discloses the remedy. It is whisky. We have often heard of sufferers drowning their sorrow in the flowing bowl, and we frequently see the condition of their gums after severe local application of this ardent spirit, but it is in neither of these ways that the real efficacy lies. The *modus operandi* is to "take a teaspoonful of whisky and put the nostril on the affected side of the face into the whisky, pressing with the finger the other nostril; then strongly sniff up the whisky when the pain instantly ceases." We have heard an outward application of this comforting cordial stigmatized as "An awful waste of the Lord's mercies," but we suppose that toothache would even justify this, and after all it is only a teaspoonful.—*Brit. Jour. Dent. Sc.*

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

SHALL THE PROTECTIVE ASSOCIATION BE ABANDONED?

Before this question is answered, let the dental profession recall to memory our condition before the dentists were banded together in this association. Go back to the time when we were annoyed by threats, suits, and communications little less than blackmail from patent claimants. Let the older members go back still farther, when the Goodyear Dental Vulcanite Company got a decision in their favor in the Supreme Court of the United States on the Cummings patent, and then everyone who had been using vulcanite was asked "to come up to the captain's office and settle" for past infringements, and to take out a license for the future. Then imagine what our condition would have been for the last eight years and where we would be at this time, having to pay \$500,000 to \$1,000,000 each year. Instead of which the profession up to this time has been saved, at a low estimate, \$5,000,000.

There is only one feature to be regretted when we think of our victory, and that is, that while the whole profession have enjoyed the benefit, less than one-fifth have, as yet, united with us. Our future will be discussed in the next issue.

FINAL DECISION ON LOW BRIDGE PATENT.

We publish herewith the decision of the United States Circuit Court of Appeals for the Second Circuit, comprising the states of New York, Connecticut and Vermont, dismissing the suit brought to enjoin infringement of the Low bridge patent. In order to fully understand the decision we refer our readers to the April, 1896, number of the DIGEST, where will be found on pages 241-4 the decision of Judge Wheeler, who reversed the former decision in favor of this patent granted in 1881 against Richmond *et al.* The decision here published is a confirmation of the decision

of Judge Wheeler on an appeal of the case to the United States Circuit Court of Appeals by the counsel for the Crown Company.

UNITED STATES CIRCUIT COURT OF APPEALS, SECOND CIRCUIT.

The International Tooth Crown Company, complainant and appellant,

vs.

Allan G. Bennett, respondent and appellee.

This is an appeal from a decree of the United States Circuit Court, Eastern District of New York, dismissing the bill. The suit is brought to enjoin infringement of Letters Patent No. 238,940, issued March 15, 1881, to James E. Low for an improvement in dentistry. Suit was heretofore brought by this complainant in the Southern District of New York on the same patent (with others) against one Richmond; the patent was sustained and infringement found (30 Fed. Rep. 775). In the suit at bar the Circuit Court found a prior use anticipating the patentee's invention, and for that reason dismissed the bill (72 Fed. Rep. 169).

Per Curiam. We do not deem it necessary to add anything to the discussion of the case in the Circuit Court. We concur with the learned judge who tried the cause in the conclusion that the real invention of the patentee was a device (consisting of a band or cap and attachments thereto) for permanently inserting artificial teeth without the use of a plate, and without using the gum as a support to the artificial denture, his device holding the tooth in place with sufficient strength to stand the strain of ordinary mastication by attaching it rigidly to the natural dentition. This invention could be put in practice by rigidly attaching the artificial tooth either to a single natural tooth adjoining it on one side, or to two adjoining natural teeth, one on each side.

The specification of the patent sets forth that:

"A band of gold or other suitable metal is first prepared and accurately fitted around the tooth adjacent to the vacant spaces to be supplied with an artificial tooth. This band is firmly secured in place by cement, which effectually excludes water or the fluids of the mouth and is thus permanently attached to the tooth so that it cannot be removed without an operation directly for that purpose. It is sometimes sufficient to prepare one of the adjacent teeth in this way; but generally it is desirable to prepare the adjacent teeth on each side of the vacant space. It will always be advisable to do so if the vacant place is to be occupied with more than one tooth."

The invention is not a bridge with two abutments. A bridge with abutments existed in the prior art. The contribution which Low's patent undertook to make to the art was an improved kind of abutment, and that improvement would be availed of when the process pointed out in the above quotation was applied to a single tooth. The circumstance that in the first claim the words, "bands" and "permanent teeth" are in the plural is not significant. The language is made broad enough to cover the process generally, and for that reason uses the plural. It claims "the herein-described method of inserting and supporting artificial teeth," but certainly no one would contend that because of the use of the words "artificial teeth" in the plural the claim would not be infringed by the insertion of a single tooth. If the patent were valid the

insertion of a single artificial tooth firmly secured to a band of gold accurately fitted and cemented to a natural tooth adjacent to the vacant space to be filled with such artificial tooth, and wholly supported by its attachment to such adjacent natural tooth, without dependence on the gum beneath said artificial tooth would be an infringement. If this were done before the application for the patent it would be an anticipation. The evidence that this is what was done in the case of Mrs. Mertz is to our minds clear and convincing. The date is established beyond a doubt, and it is equally certain that the artificial tooth thus attached was used for years. We concur therefore with the judge who heard the cause in the Circuit Court that the so-called "Beardslee-Mertz 1877 Permanent Bridge" is an anticipation of the device of the patent.

Complainant contends that the Beardslee-Mertz device does not anticipate the second claim of the patent. The specification, referring to the artificial block or tooth, says: "The lower surface adjacent to the gum is cut away at the back, and only descends to contact with the gum along its front edge, so as to prevent the appearance of an open space between the artificial teeth and the gum." The second claim reads as follows:

"An artificial tooth cut away at the back, so as not to present any contact with the gum except along its front lower edge, and supported by rigid attachment to one or more adjoining permanent teeth, substantially as and for the purpose set forth."

Complainant's counsel in argument and brief contends that in the Beardslee-Mertz device the artificial tooth is not cut away at the back. The very device, however, which was worn by Mrs. Mertz for years has been produced and, while it is not cut away in the back as much as are the devices shown in the drawing of the patent, it is manifestly sloped upwards, so as not to bear upon the gums. The extent to which the back is cut away is immaterial so long as the cutting away is sufficient to avoid pressure on the gum and leave the artificial tooth or block supported wholly by attachment to the natural dentition. Complainant's own expert speaking of the Beardslee-Mertz device says:

"If the teeth, that is, the artificial crowns, did not bear upon the gums, and were properly and sufficiently supported by adjacent caps or crowns, and the dates were early enough, I suppose they would meet that portion of the second claim of the patent in suit wherein a single natural tooth is used as a support for an adjacent artificial tooth, without bringing the artificial tooth in contact with the gum."

The date is definitely fixed, and the evidence shows that the artificial crown did not bear upon the gum, and was properly and sufficiently supported by the adjacent cap around the crown of the adjacent tooth. Under the construction which must be given to the patent as indicated above, the Beardslee-Mertz device anticipates the second claim as well as the first.

The decree of the Circuit Court is affirmed with costs.

JUDGES LACOMBE AND TOWNSEND.

It will be seen by the decision of Judge Wheeler that the invention was not patentable, as the process was wholly mechanical, and

also that it had been used before it was patented. Judge Wheeler cites two instances of prior use; that of Drs. Day and Beardslee, the former in the State of Michigan and the latter in Pennsylvania. The judge then declared that this testimony was left wholly undisputed and left no doubt as to the correctness of the date, both of which preceded Low's invention. We found, however, several other anticipations which we considered just as conclusive as that of Beardslee and Day. In fact, in the case of Beardslee, another piece of bridge-work had been worn and was produced in court. It was equally as good as that of Beardslee, but these two seemed sufficient proof for the judge to reverse the former decision. Judge Wheeler also declared that "when the method, and not the operating parts, is what is invented, that, of course, is what is to be patented. Here the natural teeth belong to the wearer, and are to be operated upon; they are not made by the inventor to operate and cannot be brought within the patent. The bands were not new in any sense alone, nor were they when combined with the artificial teeth merely, but the mode of attaching the artificial to the natural teeth permanently by the bands might have been, and if so, that was what was invented and what should have been patented."

The attorneys for the complainant made the proposition to abandon the claim where one attachment carrying a dummy was used, and tried to have this stricken from the claim, but the judges of the Circuit Court of Appeals held that there was no difference in the claims, and that the invention was not a bridge with two abutments. "A bridge with abutments existed in the prior art." (This undoubtedly alludes to the Bing bridge patent, the abutments being secured in cavities in the natural teeth.) The other claim which the complainant laid great stress upon was that the tooth should be cut away in the back and not receive any support from the gum, but the instances of prior use, especially the one of Beardsley, did not bear on the gum and was properly and sufficiently supported by caps around the crowns of the adjacent teeth.

In this connection we might mention that the International Tooth Crown Company had more recently secured a patent on a bridge resting upon the gum, undoubtedly with a view of prolonging the time, after the Low bridge patent had expired, in which to compel the profession to pay royalty, the same as in the case of the Goodyear Vulcanite Company, where, after the Goodyear patent expired,

the Cummings patent kept the profession in bondage for many years more. Time will show whether or not those interested intend to push the claim of this last bridge patent.

There is much to be said concerning the amount of work involved in this litigation, the comparatively small sum of money expended etc., but lack of time and space forbids it here. However, all these points will be fully discussed in our next issue.

Book Reviews.

TRANSACTIONS OF THE CALIFORNIA STATE DENTAL ASSOCIATION FOR 1896. Russell H. Cool, president. Published by Miles L. Farland, San Francisco. Pages 136.

* * *

TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY FOR 1896. Louis Ottofy, secretary. Published by H. D. Justi & Son, Chicago. Cloth, pages 182.

* * *

RHYMES OF THE STATES. By GARRETT NEWKIRK. Illustrated by Harry Fenn. 96 pages, bound in cloth. New York: The Century Company. 1896.

The dental profession has among its members a goodly number who have developed literary ability in fields outside the technical lines of their profession. The results of their work have been, as a rule, acceptable contributions, and have evinced more than ordinary literary skill. In recent years the tendency upon the part of dentists to outside literary ventures has increased, and is to be commended for the indication which it gives of the desire to combat the narrowing effect upon the mental horizon which constant working in a restricted technical field is sure to bring about when unopposed. Dr. Newkirk's "Rhymes of the States" is a clever and praiseworthy attempt to fix in the mind of the child certain important geographical, historical, and sociological data pertaining to the States of the Union. He has taken advantage of what is now clearly recognized as a psychological principle,—viz., that the vividness of a mental picture is *cæteris paribus* in direct proportion to the intensity of the peripheral stimuli—that is, he has endeavored to fix his data upon the mind by appealing to several sense perceptions together, and has further enhanced the effect by presenting the matter in catchy rhythmical form.—*Cosmos*.

Notices.

PROCEEDINGS OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(Continued from October DIGEST, page 620.)

RECONVENING OF RECESS OF AUGUST 3, 1896.

Tuesday morning, August 4, session called to order by the president at 10:30 a. m.

Roll of states called.

Alabama.....	T. P. Whitby.....	Selma
	J. A. Hall.....	Collinsville
Connecticut.....	George L. Parmele.....	Hartford
Delaware.....	D. M. Hitch.....	Laurel
District of Columbia.....	Williams Donnally.....	Washington
	H. B. Noble.....	"
	M. F. Finley.....	"
Georgia.....	A. G. Bouton.....	Savannah
Illinois.....	Lyndall L. Davis.....	Chicago
	A. W. Harlan.....	"
Iowa.....	J. T. Abbott.....	Manchester
Kansas.....	A. W. Davis.....	Holton
Maryland.....	A. C. McCurdy.....	Baltimore
Nebraska.....	George S. Nason.....	Omaha
New Jersey.....	F. C. Barlow.....	Jersey City
	G. Carleton Brown.....	Elizabeth
	George E. Adams.....	South Orange
	Charles A. Meeker.....	Newark
Ohio.....	F. H. Lyder.....	Akron
Pennsylvania.....	J. C. Greene.....	Westchester
Virginia.....	J. Hall Moore.....	Richmond
Wisconsin.....	Charles C. Chittenden.....	Madison

Minutes of last session read and approved.

DETAILED REPORT OF THE COMMITTEE ON COLLEGES.

RECOGNIZED COLLEGES.

Students in Actual Attendance, Session 1895-96.		Totals.	Freshmen.	Juniors.	Seniors.	Graduates.	Special.
1	Baltimore College of Dental Surgery, Baltimore, Md.....	207	86	76	45	44	
2	Boston Dental College, Boston, Mass..	191	80	67	44	37	
3	Chicago College Dental Surgery, Chi- cago, Ill.....	399	154	138	107	107	

4	University of Minnesota, Department of Medicine (College of Dentistry), Minneapolis, Minn	83	38	31	14	14	1
5	Columbian University, Dental Department, Washington, D. C.	57	25	14	18	14	
6	National University, Dental Department, Washington, D. C.	39	14	19	6	6	
7	Northwestern University Dental School, Chicago, Ill	127	60	40	27	24	
8	Southern Medical College, Dental Department, Atlanta, Ga	50	20	24	6	5	
9	University of Tennessee, Dental Department, Nashville, Tenn.	54	24	19	11	11	
10	Harvard University, Dental Department, Cambridge, Mass.	103	47	36	20	22	
11	Indiana Dental College, Indianapolis, Ind	157	67	47	43	43	
12	Kansas City Dental College, Kansas City, Mo.	135	38	47	50	47	
13	Louisville College of Dentistry, Louisville, Ky.	141	63	45	33	32	
14	Missouri Dental College, St. Louis, Mo.	101	51	21	29	28	
15	New York College Dentistry, New York City, N. Y.	303	91	113	99	74	
16	Northwestern College of Dental Surgery, Chicago, Ill.	10	3	4	3	3	
17	Ohio College of Dental Surgery, Cincinnati, Ohio.	213	88	77	48	47	
18	Pennsylvania College of Dental Surgery, Philadelphia, Pa.	313	109	104	100	96	4
19	Philadelphia Dental College, Philadelphia, Pa.	399	153	126	120	116	
20	School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.	18	8	7	3	3	
(The School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn., becomes Meharry Dental Department of Central Tennessee College.)							
21	University of California, Dental Department, San Francisco, Cal	183	70	55	58	52	
22	University of Iowa, Dental Department, Iowa City, Iowa.	210	125	50	35	34	
23	University of Maryland, Dental Department, Baltimore, Md.	214	85	78	51	42	
24	University of Michigan, Dental Department, Ann Arbor, Mich	189	67	60	62	58	

25	University of Pennsylvania, Dental Department, Philadelphia, Pa.....	303	115	110	78	74	
26	Vanderbilt University, Dental Department, Nashville, Tenn.....	146	77	38	31	29	3
27	Western Dental College, Kansas City, Mo.....	202	92	56	54	46	
28	American College of Dental Surgery, Chicago, Ill. (This has become merged into the Northwestern University Dental School, Chicago, Ill.)	400	141	116	143	126	
29	University of Denver, Dental Department, Denver, Colo.....	28	11	9	8	8	
30	Detroit College of Medicine, Department of Dentistry, Detroit, Mich....	70	24	26	20	20	
31	Western Reserve University, Dental Department, Cleveland, Ohio.....	52	20	24	8	7	1
32	University of Buffalo, Dental Department, Buffalo, N. Y.....	176	71	68	37	36	
33	University College of Medicine, Department of Dentistry, Richmond, Va	36	10	13	13	13	
34	Birmingham Dental College, Birmingham, Ala.....	36	21	7	8	6	
35	Cincinnati College of Dental Surgery, Cincinnati, Ohio.....	33	15	10	8	8	

5,378 2,163 1,775 1,440 1,332 9

Note—Special students include post-graduates and are not included with "totals."

UNRECOGNIZED SCHOOLS.

	Students in Actual Attendance, Session 1895-'96.	Totals.	Freshmen	Juniors.	Seniors.	Graduates.	Special.
1	Atlanta Dental College, Atlanta, Ga..	200	79	69	52	40	
2	Howard University, Dental Department, Washington, D. C.....	11	5	2	4	3	
3	Cleveland University of Medicine and Surgery, Dental Department, Cleveland, Ohio.....	23	6	10	7	6	
4	The New York Dental School, New York City, N. Y.....	14	9	1	4	4	
5	Marion Sims College of Medicine, Dental Department, St. Louis, Mo.	38	17	15	6	6	
6	Tennessee Medical College, Dental Department, Nashville, Tenn.	(No report.)					
7	Columbian Dental College, Chicago, Ill	62	21	8	33	25	
8	German American Dental College, Chicago, Ill.....	18	6	8	4	3	

9	Omaha University, Dental Department, Omaha, Neb.....	32	26	3	3	3
10	Milwaukee Medical College and School of Dentistry, Milwaukee, Wis. (This becomes the Milwaukee Medical College, Dental Department)	61	29	25	7	6
11	Tacoma College of Dental Surgery, Tacoma, Wash.....	25	16	4	5	3
12	National Homeopathic Medical Col- lege, Dental Department, Washing- ton, D. C. (This becomes Washing- ton Homeopathic Medical College, Dental Department).....	8	3	2	3	2
13	Baltimore Medical College, Dental Department, Baltimore, Md.....	31	22	6	3	3
14	Pittsburgh Dental College, Depart- ment of Dentistry, Western Univer- sity of Pennsylvania, Pittsburgh, Pa. (Newly organized)					
15	Ohio Medical University, Dental De- partment, Columbus, Ohio.....	62	28	21	13	13
16	State University of Colorado, Dental Department, Denver, Colo. (Newly organized).....	585	267	174	144	117

Note: The Cincinnati College of Medicine and Surgery, Dental Department, Cincinnati, Ohio, has been discontinued.

The Baltimore Homeopathic School, Dental Department, has ceased to exist.

LIST OF SCHOOLS WHICH HAVE CEASED TO EXIST.

Recognized List, 1893—Minnesota Hospital College, Dental Department, Minneapolis, Minn.; St. Paul Medical College, Dental Department, St. Paul, Minn.

Unrecognized List, 1894—Homeopathic Hospital College, Dental Department, Cleveland, Ohio; United States Dental College, Chicago, Illinois.

Recognized List of 1895—The American College of Dental Surgery, Chicago, Ill.

Unrecognized List of 1895—Cincinnati College of Medicine and Surgery, Dental Department, Cincinnati, Ohio; the Baltimore Homeopathic School, Dental Department, Baltimore, Md.

Thirteen of the twenty on the unrecognized list, before our action altered it this year, are dental departments established in connection with medical colleges. Your attention was called last year to this manifest tendency to create thus what are too often apt to be inefficient dental colleges and reasons then given for the inducements to produce them. The evidence here submitted is only an emphasis as to the necessity of our association placing some restrictions. Your committee would recommend the following resolution:

Resolved, That hereafter all dental departments formed in connection with medical colleges and applying to this association for recognition shall be required to have all the lectures delivered to the dental students in classes separate from the medical students.

The Kansas City Dental College has preferred to us formal charges against the Western Dental College, the papers of which we submit to you for your action.

A fact worthy to be noted is that nearly one-eleventh of those in the senior year, and supposedly presenting for graduation, apparently failed to pass. We consider this proportion too high, as indicating that either there is too much failure to properly prepare, or that the process of weeding out the incompetents was not begun at a sufficiently early period in the three years' course.

We would suggest that a more stringent and specific rule be enacted as to the preliminary education of applicants to the colleges, as not only the lists of questions submitted by certain colleges to your committee, but the examination papers before state boards of graduates from many other institutions show that the preliminary educational feature as now enforced is a disgraceful farce. We would further suggest that the methods of practical instruction in the operative and prosthetic departments be also controlled by some rule or system; as recent graduates before certain boards have shown an absolute lack of knowledge in prosthetics in particular, as witness a series of plates submitted by the New Jersey State Board of Dental Examiners.

In conclusion, your Committee on Colleges, in looking up the official records to ascertain exactly what their powers and duties were, found that no specifications whatever had been made; they would therefore suggest that the duties and powers of said committee be distinctly formulated.

Committee on Colleges, { L. ASHLEY FAUGHT, D.D.S., Chairman.
 { G. CARLETON BROWN, D.D.S.

Secretary read request for recognition from the Dental Department Marion Sims College of Medicine, St. Louis, Mo.

Referred to Committee on Colleges.

Report of the Committee (Drs. Harlan and Faught) on the death of Dr. Magill read and approved.

Whereas, Our former president and friend, Dr. W. E. Magill, has departed this life in the full vigor and usefulness of a busy life, we, the members of the National Association of Dental Examiners, desire to express, in a public manner, our sense of loss in the decease of one who had made for himself a place of honor and responsibility in the great commonwealth of Pennsylvania. We deplore his death as a loss to the state, his fellow-associates and friends; and, be it

Resolved, That a copy of this note be sent to his family and to the Pennsylvania State Board of Dental Examiners, and that a copy be spread on the minutes of this Association.

L. ASHLEY FAUGHT,
A. W. HARLAN.

Committee on Colleges proceeded with their report of consideration of colleges, more particularly of the Atlanta Dental College.

Dr. William Crenshaw, the dean, was called to explain about the lack of preliminary examination. He promised a new issuance of the Annual College Announcements, with rigid instructions to students that they must be prepared for a preliminary examination before being accepted as students of 1897, and then retired.

Dr. Brown spoke of the method of procuring students, meeting students en route and paying 25 per cent commission, and the fact of no preliminary examination; the case of a student expelled from one college, then taken by the "Atlanta" and graduated; of a dental house supplying means financially; and of students from the "Atlanta" not being able to buy from outside dental depots.

It was moved by Dr. Brown that the Atlanta College, not meeting the requirements of the board this year, recognition be refused. Passed.

It was moved that the college be allowed to make a new application. Passed.

Reference as to the ruling of the chairman of the Committee on Colleges as to the number of faculties in a college was answered with a motion by Dr. Brown, that a committee of three be appointed to revise and codify requirements of colleges for recognition by this association, and to remain a permanent committee until discharged. Passed.

Drs. L. A. Faught, Williams Donnally and George L. Parmele were appointed on that committee.

The report of the Committee on Colleges was accepted by the association, on motion of the Secretary.

Drs. Adams and Parmele, Committee on Suggestions in the President's Address, reported that the same should be referred to the Committee on Colleges.

Secretary moved that a committee of five be appointed to incorporate the National Association at Washington, D. C.

After discussion, carried.

President appointed as such committee Drs. H. B. Noble, Washington, D. C.; J. Hall Moore, Richmond, Va.; Charles A. Meeker, Newark, N. J.; L. Ashley Faught, Philadelphia, Pa.; Mark F. Finley, Washington, D. C.

Dr. T. P. Whitby moved that the committee make a pro rata

assessment on the state boards for any expense attending the same. Passed.

It was moved to proceed to the election of officers.

Dr. Abbott was re-elected President.

Dr. H. B. Noble, Vice-President.

Dr. Charles A. Meeker, Secretary and Treasurer.

Dr. T. P. Whitby moved that the association, in its annual reports to the journals, publish the recognized and unrecognized colleges together.

Amended by the President to read: "That where recognized colleges who have surrendered their charters are merged in other institutions that are on the recognized list of this association, the diplomas, when presented to state boards, shall still be considered reputable." Both resolution and amendment carried.

Dr. Barlow moved the Secretary publish in pamphlet form, for distribution among the members, the Proceedings of 1896-7. Passed.

Secretary read new application for recognition in 1897 from the Atlanta Dental College. Referred to the Committee on Colleges.

Resolution presented by Dr. Brown:

Resolved, That colleges recognized by the National Association of Dental Examiners be required to place on their Annual Announcements and Catalogues the fact that they are on the list of colleges recognized by the National Association of Dental Examiners. Passed.

A resolution in reference to the professors in medical colleges teaching to a class of dental students only, was, after discussion by Drs. Donnally, Moore, Parmele, Adams, McCurdy and others, lost.

Adjourned until 3 p. m.

News Summary.

WHOOPING COUGH BACILLUS.—Kourlov has been investigating the saliva of whooping cough patients, and has found in every case and in them alone, a certain special, spore-forming, ciliated amoeba, which he suggests may be the cause of the disease.—*Bulletin Medical*.

CREOSOTE possesses undoubted power to relieve the foetor of the expectoration in foul-smelling cases of bronchiectasis and phthisical cavities. In small doses (one to two minims thrice daily) it promotes appetite and tends to stimulate the powers of digestion. Beyond this it is not found that it modifies in an appreciable manner the ordinary course of phthisis.—*Medical Record*.

ADENOID VEGETATION OF THE NOSE.—Paint with 50 per cent solution of resorcin. Six to ten applications usually prove sufficient.—*Marage*.

INDIAN HAS A TOOTH FILLED.—An Indian who had a tooth filled and another pulled at Waterville, Me., furnished the first instance of a red man patronizing a dentist which had come to the knowledge of a practitioner of thirty years in that place.—*Chicago Tribune*.

TREATMENT OF RED NOSE.—Dr. Lassar (*Dermatologische Zeitschrift*) recommends scarification after various methods of exfoliation have failed. Fifteen to twenty per cent resorcin paste is his favorite agent for producing the exfoliation. A superior method to scarification is acupuncture, done with forty points mounted on a solid disc one centimetre in diameter, worked by an electro-motor and stamping machine like that used in filling teeth; this method leaves only fine scars, and thousands of pricks very light and of desired depth may be made in a few moments. Consecutive treatment is rarely necessary. In rhinophyma, which Dr. Lassar considers as an adenocystic fibroma without epithelial proliferation, he removes the hypertrophied tissue by ablation or decortication, covering the surface with Thiersch grafts, or leaving it under iodoform collodion, which in many cases serves as well.

EUCAIN.—Professor Charteris, of Glasgow University, has been making comparative experiments upon eucain and cocain. Watery solutions of the hydrochlorates of these salts were employed, being injected into guinea pigs. It was found that the toxic dose of eucain per kilo body-weight was 0.09 gram, while that of cocain was 0.068 gram. This proves that the toxic effect of cocain is more powerful than that of eucain as far as guinea-pigs are concerned. The mode of death varied. With the cocain there were more movements, more salivation, more opisthotonos, and more accelerated respirations than with eucain. It was also noticed that the physiological action produced by eucain did not follow nearly so rapidly as that which followed a similar dose of cocain under the same conditions. Hence it was concluded that the action of eucain was slower in onset and less in intensity.—*Brit. Jour. Dent. Sc.*

PHOSPHORUS WORKERS AND LIFE INSURANCE.—A great source of discontent among phosphorus workers in France is the danger attending the manufacturing of matches. It is so detrimental to health that they wished government to grant those who do this work a pension, which was denied. While yet young—say at 25—the operator will lose his teeth, he frequently becomes paralyzed and idiotic, as before mentioned, and in nearly every instance there is experienced some form of ill health. We remember while a student at Bellevue that the late Prof. James R. Wood used to hold up before his class a specimen of the lower jaw which he had taken from a patient who had introduced phosphorus into it by picking a decayed tooth with matches. The consequence was a necrosed jaw. The professor used this instance not only to illustrate the danger of the above practice, but to show that bone would grow again if the periosteum was preserved. In this case the jaw had been reproduced. So far as insurance is concerned, those who make matches or work in phosphorus are not acceptable risks.—*Medical Examiner*.

The Dental Digest.

Vol. II.

CHICAGO, DECEMBER, 1896.

No. 12.

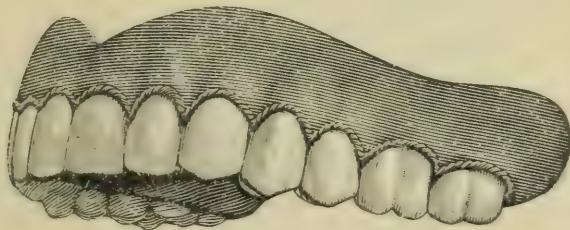
Original Contributions.

FESTOONED GUMS.

BY M. L. FAY, D.D.S., BUFFALO, N. Y.

The accompanying cut illustrates a very simple and easy, yet effective mode of making a carved or festooned gum or an artificial denture, without the tedious carving by hand which involves considerable time and patience. The method of procedure is as follows:

Arrange the teeth and wax up the case as desired, but leave the necks a little exposed, and with a closely-woven cotton string, which has been drawn through melted wax and allowed to cool, festoon



the necks of the teeth as shown in cut, pressing the string between them with any instrument suitable for the purpose. Then with a warm spatula unite the string to the wax and smooth up the case with a mouth blow-pipe, which will draw the wax up on the string and give pleasing results. Invest and pack the case, removing the string with the wax.

When ready to finish, trim up with a sharp instrument the thin margins of rubber overlapping the teeth and polish with pumice and a stiff brush-wheel. This will reduce the prominence of the festoon and make it very lifelike. Do not polish the pink rubber with the fine wheel, as the effect is much better when left dull.

THE DENTIST UP TO DATE.

BY JOE S. REED, SULLIVAN, IND.
DEDICATED TO L. A. STEWART, D.D.S., SULLIVAN, IND.

I.

I heeded not the admonition,
Shakespeare gives in words of love:
"Better bear our present ailings
Than fly to those we know not of."
I speak therefore with intense feeling
Of my experience of late:
Alas! alas! I've been the victim
Of the "Dentist Up to Date."

II.

All have read of chained Prometheus,
In the poet's tragic lays,
And the cruel strange devices
Of the "Inquisition Days."
All of these were merely playthings,
I don't hesitate to state,
For they cannot hold a candle
To the "Dentist Up to Date."

III.

How those cruel ancient monarchs
Would have gloried in the rig
Of the lilliputian grindstone
On that whirring whirligig;
Would have bartered half their kingdoms
To have drunken in their fill,
To observe the face contortions
From that automatic drill.

IV.

While this drill was still exploring
I was driven to observe,
That whatever else I'm lacking
I have quite sufficient nerve;
And I'm firm in the conviction,
Had I nerves but few or much,
The aforesaid tooth tormentor
Would keep easily in "touch."

V.

I found his lances dull as hackles,
Yet he didn't deign to whet,
But his crosscut saws, I noticed,
Had been recently reset.
And his little loaded mallet
He kept plying all the while,
That I could not help but liken
To a piler driving pile.

VI.

He's in love with his profession,
In fact, enjoys a "steady pull,"
And oft secures a good impression
(In wax) when patient's mouth is full.
He greatly prides his fine equipments,
And I'm convinced he didn't stop
Until he tested all the workings
Of every tool within his shop.

VII.

I so rejoice 'tis hap'ly over,
I now possess a "Bridge of Sighs,"
Also "Crowns" all bright and golden,
Unlike those worn in Paradise.
I here withdraw my late reflections,
There's nothing that could compensate
Me for these priceless masticators
From my "Dentist Up to Date."

NECROSIS OF THE MAXILLA.

BY E. HOWARD BABCOCK, D.D.S., BROOKLYN, N. Y.

After filling a tooth, the pulp of which has been removed and its place occupied by some appropriate material, depending upon the choice and habits of the operator, it will be found that the chance of aftertrouble is greater if the tooth be in the inferior than in the superior maxilla. At least, this has been the experience of the writer.

It was a long time before any satisfactory reason for [this difference in susceptibility to inflammation could be found, but I now

believe it is due to the difference in density of the maxillæ. The superior maxilla is less compact, and consequently any gas which may develop, through the decomposition of organic material not removed by the operator in sterilizing and filling the root, has room to spread itself through the cancellous portion of the bone and be gradually absorbed without causing much pressure on the surrounding tissues, thus being less of an irritant and less likely to cause any serious inflammation. Following out this same line of reasoning, it will be found that the greater density of the inferior maxilla accounts for its greater liability to inflammation following the operation of root-filling.

The above facts have been impressed upon me by some personal experiences with several cases of necrosis of the maxilla, both superior and inferior.

In the superior maxilla the destructive process is more of a carious than of a necrotic nature—the destruction is more of a general breaking down of the tissue; while in the inferior maxilla the process seems to be more of a true necrosis, the bone dying in masses.

In Heath's book, entitled "Injuries and Diseases of the Jaws," the statement is made that in case of necrosis of the jaws it will be found that the restorative process is much more rapid in the lower than in the upper jaw.

My experience confirms the above statement, and has convinced me that the greater density of the inferior maxilla is a cause for the greater frequency of inflammation and suppuration following root-filling; and also, the irritant being removed, this very density favors the more rapid repair of the osseous tissue.

BALSAMO DEL PLATTO—A SUBSTITUTE FOR BALSAMO DEL DESERTO.

BY S. DAVIS, D.D.S., DENVER, COL.

Since the S. S. White Dental Manufacturing Company has obtained the exclusive right of selling Balsamo del Deserto, and is charging an outrageous price for it, why not use Balsamo del Platto, which is inexpensive and quite as efficient for capping pulps, filling root-canals, etc. In short, it will accomplish anything which Balsamo del Deserto will.

The name originates from the locality in which the material is found, as it is very plentiful along the shores of the Platte River, although it may be found along all the streams rising in the Rocky Mountains. It is abundant in the desert and on the plains, perhaps carried there by the wind or floods many years ago. It is also found in Dead Man's Canon, so could just as well be called Balsamo del Morto.

The legs and wings of insects are sometimes incorporated in it, which might lead some to suppose that it is an insect product. I have seen some beautiful specimens in which whole flies and bees were entombed, the same as in amber. They get into it before it is hardened by the atmosphere, and if it will hold a fly you may be sure there is no chance for a microbe to escape.

This pitch will be found on the trunk and around the roots of the balsam fir tree, which grows plentifully in the Rocky Mountains. The pitch spreads out on the gravel or earth and is then washed into the streams and deposited elsewhere.

To prepare Balsamo del Platto—Take carbolic acid 1 part, oil of cassia 2 parts, oil of wintergreen 3 parts. Then take the solid balsam, melt by heat, add some vaseline, and then add enough of the above formula to keep the balsam in a thick liquid condition, about the consistency of honey, when cold. It will have an aromatic odor, yellowish color, and will be very adhesive, even sticking to moist surfaces. In root-filling follow with a gutta-percha cone. For lining cavities I prefer to dissolve the balsam in chloroform or alcohol and use as a varnish.

Whatever is used in filling pulp-chambers, success or failure will be in proportion to the thoroughness—first in cleansing, second in filling. In most cases I give the preference to oxychlorid of zinc.

CARE OF THE MOUTH IN RELATION TO PROPHYLAXIS OF THE DIGESTIVE TRACT.

BY G. V. I. BROWN, D.D.S., M.D., C.M., DULUTH, MINN.

A discussion of the subject under consideration necessarily concerns the two principal offices of the oral cavity in the process of alimentation and pathological conditions originating in this region, viz.: Mastication, insalivation, reflex nervous disturbances, micro-organisms.

The proper trituration of articles of food depends upon the perfect occlusion of the morsal surfaces of the teeth, and is aborted by malformation of the jaws, loss of the teeth, or destruction of their crowns from caries or other causes; by artificial dentures and bad habits of mastication.

For prevention of trouble from imperfections of the teeth the physician must naturally have recourse to the services of a dentist, but inquiry into the habits of mastication, with instructions as to their correction, are essentially important, and in this regard no greater assistance can be given than an effort to make the environments during the hours for eating such as will have a quieting mental influence and assist deliberation in all of its processes.

Upon the action of the saliva is dependent digestion of the starches and their conversion into sugar, the process continuing in the stomach after swallowing, and if this action upon the carbohydrates be insufficient, such matter becomes a source of irritation and a media for the ferment-producing bacteria, or, if passed into the intestines in an undigested state, will overtax the digestive action there and cause intestinal disturbances.

Here again mental preoccupation or mental distress must be so far as possible allayed, as upon an active consciousness of the gustatory function is dependent, in a large measure, the flow of the saliva from its glandular sources. Again, also, we find this dependent upon the effect of masticatory effort, as the activity of the parotid is much stimulated by the pressure of the ramus of the inferior maxillary, hence undue haste must necessarily result in the swallowing of a bolus of food improperly mixed with saliva. The wearers of ill-fitting artificial dentures, by reason of the dislodgement suffered in opening the jaws wide, or the dropping down on one side during an effort to crush or masticate upon the opposite side of the mouth, acquire the habit of a sliding movement and do not open and shut the jaws freely. They thus become frequent sufferers from digestive disturbances, hence the erroneous theory (still extant, I believe, among certain homeopaths) concerning the poisonous influence of mercury set free from the vulcanization of the red-rubber plates.

Reflex action from inflammations of tooth-pulps, pericementum and gums, while widespread in its general manifestations upon other parts, has comparatively infrequent direct influence upon the

digestive tract, yet there are well-known ill effects accompanying the irritation of first dentition, not, as frequently assumed, by the inflamed condition of the gums, but by the pressure at the still open end of the root in its imperfect state of development upon the pulp of the tooth, and its nerve connection caused by the tough overlying tissue resisting nature's efforts to push the crown through as growth takes place. In like manner we sometimes find difficulty in the eruption of the third molars (so-called wisdom teeth). The lance can of course largely prevent such disturbances.

The necessity and value of sterilization of the secretions of the mouth, as a prophylactic measure, with reference to diseases of the stomach and intestines, depend upon the nature of the micro-organisms found there, and whether these can withstand the action of the gastric juices long enough to become excitants of pathological conditions, or pass through into the intestines with sufficient vitality to reproduce themselves and there also continue to be breeders of disease.

These points have been most carefully determined by Dr. Miller, of Berlin, and Dr. Fenton B. Turck, of Chicago, to whom I am indebted for valuable literature upon the subject.

Dr. Miller was able, in an uncleanly mouth, to estimate by culture methods 1,140,000,000 cultivable bacteria. He isolated twenty-five different kinds, and of these twelve were again found in the fœces, eight in the stomach. He demonstrated that there were five forms of gas-producing bacteria. As a result of his series of experiments he gives the following conclusions:

1. The microbes which are swallowed at the beginning of a meal do not pass into a stomach filled with gastric juice, but into an empty stomach having a neutral or alkaline reaction when free from hydrochloric acid, which does not appear in detectable quantities until after the lapse of one and one-half hours.

2. The micro-organisms are often imbedded in solid particles of food, thus escaping for a while the action of the juices.

3. Liquid substances do not remain long in the stomach, but soon pass into the duodenum and carry with them the bacteria before any considerable amount of gastric juice has been secreted.

Turck says: "It has been observed that pathogenic micro-organisms may be swallowed and still no infection of the stomach be apparent; but let some errors of diet, the abuse of alcohol, irregu-

larities of living take place, then the mucous membrane forms a fertile soil for the development of the micro-organisms." He calls attention, further, to the fact that the bacillus coli communis developing in the lumen produces no marked change, but when developed on the walls it lowers the vitality of the cells and paves the way for more active pyogenic organisms, or if imprisoned in the tissues it at once becomes a pyogenic organism.

The following case, described by Turck, I quote, as it illustrates the value of an accurate demonstration of existing bacteriological conditions in harmony with correct diagnosis in actual practice, by which the hitherto speculative status of this subject is at once removed.

"Cultures were made from the mouth, in which were found large numbers of bacillus lacticus; germs of putrefaction, as well as fermentation and staphylococci. Pyogensaures were also found in an abscess in the mouth. Cultures were made from the stomach also and the bacillus lacticus was found; groups of thread-form bacilli and staphylococci were also found. It was a severe case of rapid gastric inflammatory process with beginning of atrophy. Disinfection of the mouth and placing the teeth in good order were the first indications in the case. A similar disinfection of the stomach with soap and water, followed by lysol, was instituted. An improvement in the case was manifested at once."

In other cases, cited by the same author, complete cures were effected simply by treating the mouth and showed the same corroborative bacteriological testimony.

Disinfection of the oral secretions must include such operative measures as may be necessary for the removal of exciting causes—filling, treatment, or extraction of carious or diseased teeth and roots, diseased bone; cleansing of pockets and deposits about the necks of teeth. The regulation of the position of the teeth in cases presenting malformations, removal of artificial dentures with, if possible, a metallic base to give an increased healthfulness* of the covered mucous membrane, by reason of better conducting properties; if not removal, at least the correction of mal-constructed bridge-work and crowns. All this of course pertains to the dentist's portion, and concerns the physician only in that if done according to his personal direction, as to the intended result, the dentist's services will be usually found to be much more effective, but the use of an anti-

septic mouthwash can do wonders of itself by repeated application and is easily within the province of every practitioner of medicine.

The difficulties encountered in the sterilizing of the buccal secretions are: 1. By reason of dilution with saliva, any drugs sufficiently powerful to destroy germs are rendered almost, if not entirely inert. 2. The short time of exposure during the process of rinsing the mouth is insufficient for those of slow action, especially when particles of solid food are impacted in the teeth. 3. Danger of injurious effects on the tooth structure. 4. Unpleasant tastes are objectionable.

With these essential facts in view, the preparation of a suitable mouthwash prescription becomes a simple matter, and further reference to extensive literature on the subject is unnecessary.

Soap, applied with a brush, is one of the best cleansers, by reason of its alkaline properties dissolving the mucous. In my own practice I have patients hold in their mouths, from two to five minutes, a solution of 1-1000 bichlorid of mercury and hydrogen dioxid, equal parts. This insures some degree of safety to both patient and operator, and upon dismissal give a prescription as follows:

R Listerin
 Glycerin, a a, ζ iii
 Carbolic acid, ζ ii

M. Sig.: Dilute one-half teaspoonful in one-third glass of water. Hold in the mouth and continue the cleansing process carefully by the watch for at least two minutes. I have found this to be effective, agreeable to most persons, and valuable by reason of its simplicity, for patients can safely vary the strength in using it from time to time, as their condition may seem to require.

During active suppuration it is sometimes necessary to urge the use of such a mouthwash every hour for a few days, but two or three times in twenty-four hours is ordinarily sufficient.

In a paper read before the last meeting of the American Medical Association I stated that I believed a part of all treatment in infectious diseases, febrile disorders, and diseases of the stomach and intestines should be a thorough disinfection of the mouth; that 95 per cent of, if not indeed all patients would have present in the mouth some condition favorable to pathogenic organisms.

My own experience is filled with illustrations of cases, including a variety of gastric and intestinal diseases, relieved and cured by

simple removal of exciting causes and disinfection of the oral cavity. What is true of my own experience is also true of all others who have given the matter active attention.

In conclusion, the question naturally arises: How much consideration of mouth diseases is possible for the general practitioner in the practical application to general practice, without expert knowledge and without being able to get the assistance of a dentist in more than a small proportion of his patients? As an answer I submit the following: In making the usual examination of the tongue, while noting its indications, look about the mouth and note:

1. The general condition, cleanly or otherwise; lesions of the mucous membrane surfaces; teeth missing, or with carious crowns, old roots, bridge-work, gold or other artificial crowns.

2. Examine surfaces of the gums for fistulous openings of alveolar abscesses, or for any sign of discharge from diseased bone.

3. If artificial dentures be worn, notice if firmly in place by making patient open and close the jaws, also the state of uncleanness.

4. See if there be deposits of tartar and other matter about the necks of the teeth; make pressure on the gums to test for discharge of pus.

5. In children's mouths look for the eruption of teeth expected at that age.

6. With symptoms of chronic nasal catarrh, having unilateral appearance, be on guard for trouble with the maxillary sinus and examine carefully the region of the upper jaw, from cuspid to second molar, for indications of a dead root or tooth, or history of one having been extracted which might have been an exciting cause.

7. Do not be deceived, even though the mouth be cleanly in appearance and filled with shining evidence of dentists' handiwork. Examine each tooth in as strong light as possible, compare color with that of its neighbors in the arch, and if one be slightly darker than the rest it may indicate a dead pulp, and if the history of treatment does not account for its color, quite probably the pulp-chamber of such a tooth is filled with putrescent matter from which might be ignited an infection at any favorable opportunity.

8. Percussion with some light metallic instrument will often reveal, by pain or difference in sound, an affected tooth. Thus, by simple methods of observation, nearly all the pathological condi-

tions of the mouth can be readily diagnosed, and the advisability of the disinfection at least determined while engaged in the daily round of visits.

Whenever the internal administration of antiseptics is indicated, is it not reasonable to assume, in view of the testimony, that the beginning of the digestive tract should be cared for?

As a last word, and even at the risk of irrelevancy, I wish particularly to call attention to the consideration of the important bearing of this subject in cases of appendicitis, and, without entering into a discussion of this subject, to suggest that with the powers of resistance impaired in the vicinity of the seat of the inflammation, constant passage of pyogenic organisms must be a dangerous and inviting cause of infection, at least sufficiently so to warrant as rational the effort to prevent their introduction from the mouth. Especially is this true in cases that show a tendency to recur from time to time without operation, and doubtless many an otherwise aseptic operation may have been rendered useless by disregard of this precaution.

How dear to our heart is the cash on subscription,
 When the generous subscriber presents it to view;
 But the man who don't pay—we refrain from description,
 For perhaps, gentle reader, that man may be you.—*Ex.*

RELATION OF TUBERCULOUS GLANDS IN THE NECK TO DENTAL CARIES.—Dr. Starck, from observations upon 113 children, has established a distinct relationship between lymphadenoma and dental caries in 41 per cent of cases. In two cases he succeeded in discovering the presence of the tubercle bacillus in the tissues situated between the roots of a molar in direct contact with diseased glands. He considers it most important in treating these cases to extract all carious teeth, and in every way to place the oral cavity in a perfectly healthy condition.—*Brit. Jour. Dent. Sc.*

TOOTHPICKS prepared by nature are a product of Spain and Mexico. *Ammi visnaga*, an umbelliferous plant, is called the "toothpick bishop-weed" on account of the use made in Spain of the rays or stalks of the main umbel. These, after flowering, shrink and become so hard that they form convenient toothpicks. After they have fulfilled this purpose they are chewed and are supposed to be of service in strengthening the gums. The spines of *Echinocactus visnaga* are in common use among the Mexicans for the same purpose. The number of these spines upon a single plant is something enormous. A comparatively small plant in Kew Gardens was estimated to have 17,600, and a large specimen in the same place could not have fewer than 51,000.—*Brit. Jour. Dent. Sc.*

Digests.

CONGENITAL TEETH. By A. S. Waiss, M.D., New Orleans. On January 11, 1895, I was called to confine Mrs. M—, a multipara. After a somewhat tedious labor twins were born—a boy and a girl. The boy weighed four pounds six ounces, the girl four pounds eight ounces. They were both poorly nourished, the skin falling in loose folds over the whole of the body, of a brown-yellow color, almost simulating jaundice. The fontanelles were large, rachitic to all appearance. But the abnormality that at once impressed the mother and the rest of the family as a most deplorable ill omen was the discovery of an upper incisor tooth in the girl and two lower ones in the boy. The teeth were all loose, being held, as it appeared, only by a depression in the gum, the teeth being free from the alveolar process. The girl lost her tooth in the first twenty-four hours—what became of it no one knew. The boy retained both of his until the second week, when, being greatly in the way of his nursing, I removed them with my fingers. The gums after the extraction did not bleed. Both children died in their fifth month of the same ailment—splenic anemia. Numerous microscopical examinations of the blood were made. The spleens were so enlarged as almost to occupy two-thirds of their respective abdominal cavities. No necropsy was permitted.—*Medical Record*, November, 1896.

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ON THE ADVISABILITY OF INSERTING DENTURES IMMEDIATELY AFTER EXTRACTION IN CERTAIN CASES. By E. P. Collett, L.D.S., Eng. Read before Manchester Odontological Society. The presence of useless teeth and stumps, even apart from the frequent association of abscesses and inflammations of the gum, leads to such a general catarrhal condition of the whole buccal cavity, tongue and pharynx, that relief has to be sought either by remedial treatment or extraction in order to obtain a sanitary condition.

It is sometimes very difficult to decide whether to cut off or extract broken front teeth. Take the case of a girl of eighteen, with perhaps the four upper incisors black and broken, and with

abscesses that would take weeks to cure, even if curable. Perhaps she cannot afford to pay for crowning the roots properly, so nothing remains but to insert a denture.

Next, shall we extract or cut off these teeth? Whenever possible to gain the patient's confidence sufficiently to do what you like with the mouth, I say, and say unhesitatingly, *extract*, and extract at once, for it is quite certain that some day these roots, if left in, will give trouble and have ultimately to come out. I must take this opportunity to protest against the iniquitous and increasing custom, especially amongst the lower-class advertising dentists, of leaving foul roots to discharge pus into the mouth, pollute the breath, and cause endless troubles. How often, after clearing a mouth completely of all stumps and bad teeth, do we not find an immediate improvement in the patient's general health, probably due to the improved sanitary condition.

But to return to the case under discussion; we have decided to extract the four teeth, and then the main problem of this discussion arises. How can we insert the new teeth, for our patient does not wish to be seen by her friends and admirers in the edentulous condition. I answer, take your impression at once, make and try in your plate as soon as possible, whether it be of gold or vulcanite, and plant the new incisors well up the sockets a quarter or even half an inch up under the gum, taking care that the plate goes into the mouth well within twenty-four hours of the extractions, and allow the gum to heal up around the artificial teeth. Tell the patient that the plate is to be worn day and night, and only to be removed for purposes of cleansing; by these means you gain a double object: your patient gets used to the foreign body in her mouth much quicker than she would do if continually taking the plate in and out, and you also prevent any unsightly line of union between the gums and the new artificial teeth. The *shrinkage* also of the gums seems much more gradual and is less in degree, for though the shrinkage of the alveolus may be unaffected, yet the tab of tissue folding over in front of the teeth makes this absorption less apparent; for if the artificial teeth are pressed sufficiently high into the sockets, even after two or three years there is no *space* between the gum and the teeth, though naturally the gum is flatter than formerly. There is another advantage, in that you maintain the exact arch that nature originally assigned to the particular

mouth, and in after years it may be useful, when the other teeth come to be lost, to know the relative position of the incisors in the mouth.

There is another class of cases where this immediate insertion of teeth is most useful, viz.: in those mouths where the incisors are long, rapidly loosening and protruding. How often we have patients with a mouth of this character who come to us for advice; and here again I say extract, and take your impressions at once. In these cases it is better to select teeth that are narrower than the natural ones, and while planted quite half an inch up the sockets, can have their tips inclined much further in than the teeth just extracted, a slight space being left between each tooth. Here the improvement in appearance is very great. When the denture can be inserted the same day as the extraction the results seem best of all, and experience shows that the gums are not so sore as when we wait till the day following, for then the process of healing by granulation has commenced.—*British Journal Dental Science*, November, 1896.

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A LIGHT ARTIFICIAL DENTURE. By W. H. Todd, D.D.S., Columbus, Ohio. Presented at Northern Ohio Dental Society, June, 1896. After you have carved and prepared the plaster model as the mouth would indicate, it should be painted with a thick shellac varnish, and covered, where you want the plate, with Japanese lead (lead foil that comes in chests of tea). Be sure to have the foil burnished on the model, so that every inequality is shown. Now get the articulation as usual. If you wish to try in, take a piece of hard base plate and cut it short of the alveolar ridge, so that when the teeth are set up it can be cut out, leaving the teeth standing. Mount the teeth and try in; if all right cut out the hard base plate as close to the pins of the teeth as possible, replacing the base plate with a plate of Japanese lead, using two or three pieces according to thickness of plate required, smoothing up next to the teeth, also the rim, with wax, just as you want the plate when finished. Then take another piece of Japanese lead and cover the entire palatine portion and rim of plate to the teeth, always burnishing each piece down close. The last piece cover with shellac varnish so that it will adhere to the other part of the flask, then flask up. Warm before separating; take out the middle pieces of foil and wash out with hot water. Use a piece of chamois skin and a little mercury and pro-

ceed to polish the foil in both halves of the flask until it is as bright and smooth as glass, then you are ready to pack, using the toughest rubber you can buy.

When you take the plate out you will have nothing to do but trim the edges and brush on the lathe, the result being the lightest, toughest and thinnest plate made.—*Ohio Dental Journal*, November, 1896.

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IS IT A FACT THAT TEETH DECAY ON THE LEFT SIDE OF THE MOUTH MORE THAN ON THE RIGHT? IF SO, WHY? By F. S. Whitslar, D. D. S., Youngstown, Ohio. Before same society. To answer the question definitely, if more teeth decay on the left side of the mouth than on the right, would require more time and research than an active practice of nearly half a century would afford. Inasmuch as it is a question involving statistics, I ask your careful attention to the following as an approximate answer:

Abstract of the first eight volumes, recording the condition of the teeth of the human crania in the Peabody Museum of Harvard University, tabulated by Drs. Andrews, Knight and Mr. G. W. Newton, anatomist.

ANCIENT PERUVIANS.

SUPERIOR MAXILLÆ.

Number of maxillæ examined	408
Number of decayed teeth observed	189
Number of decayed teeth on the right side	93
Number of decayed teeth on the left side	96
Diminution in number of teeth	87
Teeth lost <i>ante mortem</i> on left side ..	522
Teeth lost <i>ante mortem</i> on right side ..	505
Teeth lost <i>post mortem</i>	3343
Cysts the result of alveolar abscesses	357

INFERIOR MAXILLÆ.

Number of maxillæ examined	110
Number of teeth decayed	48
Number of teeth decayed on right side	23
Number of teeth decayed on left side	25
Teeth lost <i>ante mortem</i>	187
Teeth lost <i>ante mortem</i> , right side	91
Teeth lost <i>ante mortem</i> , left side	96
Teeth lost <i>post mortem</i>	845
Cysts the result of alveolar abscesses	30
Enamel of teeth pitted ..	15

CALIFORNIA INDIANS.

SUPERIOR MAXILLÆ.

Number of maxillæ examined.....	159
Number of decayed teeth observed	30
Number of decayed teeth on right side	12
Number of decayed teeth on left side	18
Teeth lost <i>ante mortem</i>	417
Teeth lost <i>ante mortem</i> on the right side.....	196
Teeth lost <i>ante mortem</i> on the left side	221
Teeth lost <i>post mortem</i>	780
Cysts the result of alveolar abscesses	154
Enamel of teeth pitted	45

INFERIOR MAXILLÆ.

Number of maxillæ examined.....	87
Number of decayed teeth observed	31
Number of decayed teeth on the right side.....	15
Number of decayed teeth on the left side	16
Teeth lost <i>ante mortem</i>	157
Teeth lost <i>ante mortem</i> on the right side.....	75
Teeth lost <i>ante mortem</i> on the left side	82
Teeth lost <i>post mortem</i>	383
Cysts the result of alveolar abscesses	64
Enamel of teeth pitted	2

NICARAGUANS.

SUPERIOR MAXILLÆ.

Number of superior maxillæ examined	9
Teeth lost <i>ante mortem</i>	45
Teeth lost <i>ante mortem</i> on the right side.....	26
Teeth lost <i>ante mortem</i> on the left side	19
Teeth lost <i>post mortem</i>	73
Cysts the result of alveolar abscesses.....	2
Enamel pitted.....	1

INFERIOR MAXILLÆ.

Number of inferior maxillæ examined.....	11
Number of teeth decayed on the right side.....	5
Number of teeth decayed on the left side.....	3
Teeth lost <i>ante mortem</i>	28
Teeth lost <i>ante mortem</i> on right side.....	14
Teeth lost <i>ante mortem</i> on left side.....	14
Teeth lost <i>post mortem</i>	99
Cysts the result of alveolar abscesses.....	2

I will not weary you with a detailed statement of the teeth of the Del Fuegan, Mexican, Coahuilan, Guatemalian, and an examination of prehistoric crania by Dr. J. R. Patrick, but will give

the total number of teeth examined and the percentage of teeth diseased.

Total number of teeth examined	8481
Total number of teeth diseased	2493
Total percentage of diseased teeth	29.4
Total number of upper teeth examined	5655
Number of teeth diseased.....	1866
Percentage of diseased teeth	33.0
Total number of lower teeth examined.....	2826
Number of teeth diseased.....	627
Percentage of teeth diseased	22.2
Total number of teeth diseased on right and left side.....	2493
Number of diseased teeth on right side	1220
Number of diseased teeth on left side	1273
Excess of percentage of the left over the right	4.17

At this point I call your attention to the fact that although but a limited number of crania have been tabulated, you will observe that all the lesions that are present in the oral cavity of our race to-day were present in a great number of those prehistoric crania, from which fact we are led to conclude that decay of the teeth is not born of civilization, but is a child of the ages. Another fact worthy of notice: The superior teeth are liable to decay earlier and more rapidly than the inferior. Taft gives these percentages in 1,000 cases:

Central incisors	2½
Lateral incisors	3⅔
Cuspids	2¼
1st Bicuspid	8⅔
2nd Bicuspid	13⅓
1st Molar.....	37
2nd Molar.....	22 2-5
3rd Molar.....	10⅛

In 10,000 cases Magitot found decay as follows:

Superior.....	6004
Inferior.....	3996
Right side.....	4791
Left side.....	5209

Pardon a reference to a personal record. Operations made from 1865 to 1875 show that 3½ per cent more operations were made on the left than on the right side of the mouth.

From the foregoing we are led to conclude that decay is more prevalent on the left side, and in upper jaw, with the exception that

the lower first and second molars are more affected by decay than the upper.

Having briefly and perhaps imperfectly answered the first question, I now answer the second, Why do teeth decay on the left side of the mouth more than on the right?

The principal reason why teeth decay on the left side more than on the right is because people eat on the right side. This cleanses the teeth by rubbing off the food which would otherwise ferment and decompose, thereby generating acid which would act on the structure of the teeth and cause decay. All teeth should have exercise. It promotes the circulation of the blood in the gums and peridental membrane and pulp tissue, consequently the organic portions of the teeth have more power to resist the ravages of disease; in other words, vital resiliency is stronger. The shape of the teeth and gums naturally is made for the food to glide over them, but if not used of course the food will stick to them. Carbohydrates and starchy foods are principally concerned in decay.—*Ohio Dental Journal, November, 1896.*

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THE USE OF AMALGAM. By C. Edmond Kells, Jr., D.D.S., New Orleans. Before Southern Dental Association, July, 1896. Amalgam is my main dependence in a large class of cases. The less metal there is in a tooth, the better it is for the tooth. Fill the pulp-chamber with cement, and over that place a veneer of amalgam. In places where amalgam would show and not look well, combine gold and amalgam in the cavity. First fill the portion that will be visible with gutta-percha and complete the filling with amalgam. At the next sitting remove the gutta-percha, leaving a nice little cavity with one wall of amalgam, and fill that with gold. I have been doing this with great satisfaction for a long time. There is something in the combination of gold and amalgam that saves teeth better than all gold or all amalgam. There are cases, however, where you cannot use amalgam with as much ease as you can gold, or in very small cavities. In the front teeth there is no choice; you have to use gold, but you do your patients a kindness not to torture with long sittings for gold fillings in the back teeth. If you take the same pains in the use of amalgam you will get as good results. I wash my amalgam in alcohol, and squeeze it in double china silk.—*Ohio Dental Journal, November, 1896.*

DRY SOCKET. By J. Y. Crawford, M.D., D.D.S., Nashville, Tenn. Before Southern Dental Association, July, 1896. I would like to call your attention to a peculiar condition which I have called *dry socket*, not having any other name for the condition I wish to speak of. After the extraction of a certain tooth the socket remained open and dry for twelve months. In another case the left lower wisdom tooth was removed with great difficulty. There was no bleeding after the extraction, and the patient complained of more or less pain. I suggested that she lie down in the ladies' dressing-room and rest awhile. She sent for a physician, who gave her some stimulant, and she went home, but suffered very much that night. Her physician gave her a strong opiate and advised her to return to me for treatment. Late the next evening she came in. There had been no bleeding from the socket; the jaw was somewhat sore and the wound clean and nice. That night she had severe paroxysms of pain. The 6th year molar was a dead tooth, on which she had worn a crown for seven or eight years; the 12th year molar was in position. She was impressed with the idea that the pain was in the crowned molar, but I examined it thoroughly and was convinced that that was not the case. The socket of the extracted tooth was still open. I washed it out well with warm water and packed it with iodoform gauze. The next day the gauze came out perfectly clean and dry, with absolutely no exudation in the socket. The suffering continued until even the scalp became very sore. The only relief obtained was from the insertion in the socket of cotton dipped in chloroform and then in sweet oil, with a tampon of dry cotton. The patient said she had never experienced such severe pain in the whole side of the face, head and ear.—*Ohio Dental Journal*, November, 1896.

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PORCELAIN FILLINGS. By Elof Forberg, Stockholm, Sweden. I have been using porcelain fillings on a large scale since 1883. The material I use is of three kinds: (1) artificial teeth; (2) cylindrical bars; (3) body and enamel for fusing. Of artificial teeth the English ones, I consider, are the best, as their substance is more homogeneous than that of the American, and they are therefore more suitable for grinding. I use the American (How's) crown only when it is a question of repairing a broken corner of an incisor, where more or less of the cutting-edge has to be replaced, and when,

therefore, with a view to strength, platinum pins are considered requisite. This crown is hollowed out at the back, and therefore very thin, and it is provided with four thin, pliable platinum pins, which can advantageously be used as fastenings for the porcelain filling.

My method of using parts of artificial teeth as fillings has been explained by me at the meeting of the American Dental Society of Europe, at Coblenz, in 1887. It is briefly as follows: Having completely excavated the cavity and finished the edges, I take a piece of colored paper, or somewhat thick tin-foil, and hold this over the tooth surface with one hand, while with the other hand I rub the paper with a polishing-steel, so that the edges of the cavity cut through the paper. In this way I get a mold which perfectly shows the form of the cavity. This mold of paper or tin-foil is then stuck on, with varnish or something similar, to an artificial tooth, the color of which corresponds with that of the tooth to be fitted, when it should be observed that the curvature of the surface of the artificial tooth should be tolerably in accordance with that of the natural tooth; it is preferable, especially in case of a larger defect, to place the mold on that part of the artificial tooth which corresponds with the position of the defect of the natural tooth.

Going by the mold, glued onto the tooth, it will now be easy, by using cutting pliers and corundum or carborundum wheels, to form an inlay that will perfectly fit the cavity, and this can be done in the laboratory, so that all that remains to be done in the operating-room are the finishing touches, which must be from the cavity direct; before doing so the mold should naturally be removed, and the inlay fastened on a metal mandrel with gum-lac or a mixture of wax, rosin and gutta-percha, which mixture is very suitable for sticking on pieces with (as well as for using as temporary fillings). When the piece has been accurately fitted and everything has been made ready for the filling, the piece should be fastened in the cavity with Harvard cement. The cement, which should be well stirred and rather thin, is applied around the edges of the piece, which is then quickly pressed into the cavity, where it should be held with a steady pressure for some minutes to prevent its being displaced by compressed air or otherwise before the cement hardens. Only a thin layer of cement now separates the tooth from the porcelain inlay. The color of the cement should be

a shade darker than that of the tooth. When How's crowns are used the piece should, of course, be fitted so that one or two of the platinum pins may be used as fastenings.

If, then, for instance, repairing a partly broken tooth, it is desired to have, on the palatine or lingual side, a material which, better than cement, can resist wear, the cement on that side may be covered with a thin layer of amalgam, or with gold, or one can, before inserting the piece, add melted glass or porcelain, thus forming the contour of the tooth. This course of action is preferable to making the parts entirely of glass or porcelain, inasmuch as one then gets a harder and stronger piece, and it is also then easier to get precisely the shade of color that is wanted.

The porcelain cylinders are naturally intended for cavities which have or can be given a cylindrical shape; thus, particularly for incisors with enamel defects, etc. The cylinders should be about twenty millimetres long and from one and a half to four millimetres in diameter, or nearly corresponding with the inlay drills that are met with in the market. The porcelain substance ought to be thoroughly burned, so that on breaking or grinding it one gets a firm and bright surface, and should be of such shades of color as are mostly met with. My method of using such porcelain cylinders, for which method I claim priority, is as follows: A cylinder, of suitable color and a little thicker than the drill used, is fixed in a porte-polisher with gum-lac or the gutta-percha mixture previously referred to. When rotating in the machine the cylinder is clasped round with a corundum cloth held by the left hand, and is thus ground (slightly conical) until it can just be pushed into the cavity. The cylinder is then moistened with water or glycerin, is dipped into fine carborundum powder, and, while rotating, is introduced into the cavity, where it will then be perfectly ground in. In doing this the hand-piece must be held very steadily, with only a slight pressure on the cavity to prevent the cylinder from breaking. The corundum powder is then washed away with water, the cavity is dried and the cylinder tried. The end of the cylinder is now ground off somewhat, so that the piece, when placed, rests close against the walls of the cavity. It is better not to use too fine a corundum wheel for this grinding, as the cement will adhere better on a rough surface. If the cavity is not too shallow no other fastenings are required for the piece. The cylinder is then marked

to the depth it enters into the cavity, and it is then cut nearly off at that place with a thin diamond or carborundum wheel. A thin layer of cement or gutta-percha solution is then applied round the sides of the cylinder, which is then inserted into the cavity with a firm pressure, and held there until the cement has partially hardened. With a slight movement of the hand the cylinder is then broken off at the place cut through. Some melted wax or paraffin is then poured on with a spoon-shaped instrument. The piece is not polished until the cement has hardened well. If these cylinder fillings are carefully done and well polished with Arkansas stone, etc., it is quite impossible to distinguish them from the natural tooth when standing a few paces off. The advantage of this method with cylinders instead of common inlays is that the cylinder can safely be fixed in a porte-polisher, and thus ground against a corundum wheel and cloth, as well as in the cavity itself, without the risk of slipping, which, with small inlays, generally is the case, even though they be fixed on metal mandrels. The cylinders can also be used for cavities of an oval or other shape when they are ground in as common inlays and cut off as previously described. Even then one has the advantage of being able to hold the piece fast while working.

The way of using enamel for molding is well known. I only want to mention a few details of my way of procedure. Having pressed the gold-platinum foil well up, thereby using cotton and polishers, I pour some hard wax (consisting of one part of wax and two parts of rosin) into the mold thus obtained. I then pack the wax well, while it is hardening, and also press it over the surface of the tooth. By this means I get a very good cast of the cavity, and also prevent the gold-platinum mold from altering shape while being taken out of the cavity; and, lastly, I can get a plaster-cast model of the tooth, whereby I can better see the shape of it when forming and fusing the porcelain filling. I now mostly use Reisert's enamel, which is melted in an oven. In order to obtain a natural color a somewhat yellow enamel should be used at the bottom, and on top of that the color chosen. I generally also add some continuous-gum body to the first layer. I formerly used a heated instrument for pressing the inlay into the cavity, but it seemed to me as if that rendered the cement less durable. In cases of approximal cavities I generally use a thin linen band for pressing in the piece and removing the superfluous cement.

The question as to what cavities are particularly suitable for porcelain and glass fillings I think I must answer as follows: Fillings of the kinds mentioned are suitable for visible defects in the incisors, cuspids and (possibly) bicuspids. I have used Roustaig's cement as long as it could be had, and afterwards Harvard cement. As regards the question how long a time these fillings will last, it depends upon three factors, viz.: (1) the condition of the cavity, (2) the degree of thinness to which one has succeeded in reducing the cement layer, and (3) the amount of attention the patient gives to his mouth.

The cavities should not be too shallow (especially not cervical cavities, in which it is, as a rule, difficult to get durable fillings). I have several cases where porcelain fillings, in larger cervical cavities of irregular shape, as well as in cavities which cover the whole of the approximal surface and half of the cutting edge of incisors, have lasted ten to twelve years, nothing having been done to them in the meantime excepting refreshing the cement stripe a little once or twice. The most durable is naturally the cylinder filling, because, having rotated and ground itself into the cavity, it fits so perfectly that the cement layer is absolutely as fine as a hair. Here, as elsewhere, hygiene plays an important part. To insert a series of porcelain fillings into cervical cavities on a person who, on account of neglect (or of chronic gingivitis), has the cervical parts of his teeth covered with deposits is, I consider, labor totally thrown away.

The last question, whether porcelain fillings can be considered as a satisfactory substitute for gold, aside from esthetic consideration, has previously been partly answered by the mentioning of porcelain fillings which are now ten to twelve years old, and which, by all appearances, may last as long again. It may generally be said that porcelain fillings can rival gold fillings in durability in cases where they, with a minimum cement layer, touch upon tolerably firm enamel edges, and where, in biting, their surface does not articulate against the opposite teeth.—*International Dental Journal*, November, 1896.

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THE NATURE OF PHYSICAL PAIN. By E. Bergstresser, M.D., D.D.S., Abilene, Kan. Read at the Interstate Dental Meeting, June, 1896. There are two theories extant as to the

exact nature of physical pain. The first theory, which is held by all the old school of psychologists and many of the most eminent modern ones, does not regard pain as a pure and simple sensation like color, sound, smell, taste or touch, but places it in the realm of the feelings. The activities of the mind have, as you are aware, long been defined under the terms of *knowing*, *feeling* and *willing*.

Sensation belongs to the first grand division of mental phenomena. There is nothing more difficult to define than the *feelings*, which constitute the second grand division, and to which pain has been assigned by most psychologists and biologists. Prof. G. T. Ladd, in his large work on psychology, avoids the task of making a definition, and in a negative way states that the feelings may be known by their difference from thoughts, ideas and volitions. The feelings are too primary and fundamental to admit of analysis, but in a general sort of a way the feelings may be defined as a mental stirring or excitement arising through either the body or the mind, and just as the bodily or mental state is beneficial or harmful to the organism, will the feelings aroused be pleasurable or painful. If a probe be plunged into the skin or the pulp of a tooth, the peripheral nerves convey the stimulus to the brain, and there an impression is produced which excites in consciousness a special sensation called touch. The mind, on experiencing this sensation, has a stirring commotion or feeling aroused that is called pain, because this particular form of touch is injurious to the organism. On the other hand, if the soft ruby lips of your wife or sweetheart came in contact with your obicularis oris, the stimulus on being conveyed to your brain produces in consciousness a touch sensation of entirely different quality from that of a nerve-broach, and the kiss, being highly beneficial to the organism, arouses a feeling of pleasure. Pain having a mental origin is of exactly the same nature as that arising from the senses, according to this theory. A mother witnessing the dying struggles of her child has thoughts arising in her mind which bring about feelings of pain similar in nature to those endured in tooth extraction.

All feelings are classed as pleasure or pain. They are also divided by Prof. G. T. Ladd according to the varying source, accompaniment or reference of the feeling. First, we have what are called sensuous feelings, because they accompany the special sensa-

tions of color, sound, smell, taste, touch, heat and cold; second, we have intellectual feelings that accompany the process of ideation; third, are the esthetic feelings which arise with our perceptions and ideas of beauty; fourth, the ethical feelings, which are experienced in our contemplation of right or duty, or their opposites. These details are here given in order to clearly present the traditional theory of physical pain, which is held as strongly as ever to-day. In the opinion of such men as Ward, Wundt, Spencer, Bain and Ladd, the pain from an aching tooth or a burnt cuticle is a sensuous feeling—that is, a feeling that is determined by and attached to one of the special senses, which happens in these cases to be touch and heat. The trained and orderly thinker attempting to follow a loose and disjointed argument, an artist of experience and skill on reviewing a daub of a picture, or a religious enthusiast witnessing the desecration of a holy shrine, all have arising from these various sources the same feeling of pain that comes to the occupants of our dental chairs, but only differing in quality and intensity. In this crude way we have tried to present the classic theory or explanation of pain. It always considers pain the same thing, whether accompanying physical or mental activities.

The second theory of physical pain regards it as specific a sensation as color or touch, with a distinct nervous apparatus to bring it about. This is claimed so far, at least, as the phenomenon of pain is connected with cutaneous surface and its appendages the teeth. In support of this theory it will be first necessary to investigate some physiological experiments and some pathological conditions.

At one time Goldscheider announced his discovery of special pain terminal nerves, but since then he has withdrawn his claim to the existence of any such specialized nerves. Schiff, by cutting the gray matter of the anterior columns of the spinal cord, and leaving the white matter of the posterior columns intact, produced insensibility to pain without loss of touch and temperature sensibility. This would seem to indicate that pain impulses and touch and temperature impulses pass through different tracts in the cord. All who have paid close attention to the analgesic or pain-removing action of chloroform, have noticed in the earlier stages of the narcosis a time—brief in duration, it is true—when there was marked insensibility to pain, but maintenance of touch and temperature. In the local effect of cocain we nearly always have the sense of

touch present while pain is gone. The patient remarks, "I felt you pull the tooth, but it did not hurt." On the other hand, carbolic acid seems to benumb touch without appreciably removing pain. In the disease known as syringo-myelia, which consists in a breaking down of the tissues of the spinal cord and the formation of abnormal cavities in its substance, there occurs insensibility to pain in the legs, heat and cold arouses no response of recognition, but the tactile sensibility is many times normally present. Locomotor ataxia frequently exhibits symptoms where pain, touch, heat and cold sensations were all absent from the legs.

The numerous phenomena of hysterical subjects show evidence in many cases of complete abolition of pain, but all of the other cutaneous senses present.

Dr. Weir Mitchell has recorded a case of a female patient, recovered from hysterical paralysis, who had complete cutaneous insensibility to pain, but who still experienced pain from internal organs. Touch, heat and cold were still sensible to her, but they were not painful. It was only by experience and care that she avoided injuries, and not because they were painful *per se*. Dr. Mitchell also makes notice of the case of a man living in Georgia, and of considerable political prominence, who lived his entire life without evidencing any power to feel pain. All his other sensations were normal. On one occasion he bit off a sore finger simply because of its inconvenience. An ulcerated toe of three years' duration never caused him a moment's pain. An operation for cataract was painless to him. His life was lived without the experience of physical pain.

There are many cases on record, too, where the cutaneous pain sense was present after touch and temperature senses were gone. Schiff divided the posterior columns of the cord, and thus blocked the impulses that awaken sensations of touch. The anterior columns being intact, the pain sense was still present. Mr. C. A. Strong quotes a case of Mosler's of nervous disease, where the brain of a woman was affected: "The right side was insensitive to touch, though pain and temperature sensations remained normal. The prick of a pin caused distinct pain, yet she did not feel the laying on of the entire hand. When a fold of skin was lifted between the fingers and severely pinched, she was aware of what had happened through the pain alone. In a case of locomotor ataxia, also recorded

by Mosler, the prick of a pin caused pain everywhere, yet on the left leg the pressure sense was so dulled that the patient could not tell the difference between 100 and 500 grams, nor even feel their weight on the skin."

These cases and conditions seem to establish a very satisfactory explanation physiologically of physical pain in so far as the skin and teeth are concerned. These evidently are specific parts of the peripheral nervous apparatus that convey separately impulses or excitants that are resultant in sensations of pain, touch and temperature, respectively. These cases cited show that pain may be present without touch or temperature sense. Touch and temperature sense may continue after or while pain is absent. There are authenticated cases not quoted in this paper where pain and temperature sense were present and touch absent. The conclusion is fair, therefore, that pain is a sensation, and that the impulses cause it to travel from the periphery along special tracts, and from special terminals, just as do the impulses exciting the sensations of touch, or heat or cold. We declare for the existence of pain nerves as the most easy and satisfactory explanation of physical pain in all its locations. There seems to be sufficient evidence adduced already to prove this true so far as the skin and teeth are concerned.

The objections to this conclusion filed by the adherents of the "combination theory," which views pain as a mental excitement accompanying certain sensations, is stated by Prof. G. T. Ladd briefly, but unsatisfactorily. "The relative slowness of pain is probably due to the fact that a more diffuse excitation of nervous substance, both peripheral and central, is necessary for the production of pleasure-pains than of comparatively indifferent sensations. The explanation of the apparently different paths of reaching the brain is probably connected with the same fact. While nearly everything which we do know about the conditions of our pleasures and pains is opposed to the view which considers them as specific sensations. Indeed, if the susceptibility of the areas of the skin is different for painful feelings and for sensations of temperature and touch, this may be held as another proof of the heterogeneity of the neural processes which underlie feeling and sensations in general."

Mr. H. R. Marshall, in his book, "Pain, Pleasure and Esthetics," presents the theory that pain is a quality of some cutaneous sensibilities just as intensity is an attribute of color or sound. In order

to explain the facts of partial anesthesia, he avoids the theory of special pain nerves by suggesting that the skin has a fourth sense, which he calls the "cutting-pricking" sense, and that the exaggeration of this sense brings about pain. Therefore, neurotics, whose skins are insensible to pain, while touch and temperature are intact, have been deprived of this "cutting-pricking" sense along with its pain-giving capacity. The pain-giving capacities of the tactile and temperature senses in these cases are still present.

This explanation does not seem tenable in view of the cases cited by Dr. Weir Mitchell, where touch and temperature were felt, but without pain. This sort of thing could not exist if cutaneous pain was due to the "cutting-pricking" sense and its accompaniment of pain.

It has also been objected to considering pain as a state like heat, cold, touch, color, hearing, smell or taste, because these are classed as sensations. All these various sensations are the results of special stimuli in the environment on special nerve terminations. The terminals of the auditory nerve are only acted upon by atmospheric waves, the retina is only affected by vibrations of the hypothetical ether. There is no form of stimulus in the environment to which physical pain can be the special correspondent. Mr. Marshall on this account considers it a mistake to call pain a sensation. To this may be replied that hunger, nausea, thirst and fatigue are classed as sensations, yet there is nothing in the outside world that could be considered as correspondents.

As regards the quality theory, which views pain as an attribute of a sensation, it may be recalled that there are many sensations of extreme pain where it is impossible to distinguish any form of sensibility to which it could be attached. A quality or attribute can never exist so prominently in consciousness as to conceal the thing to which it belongs. The brightness of the sun can not drive from our minds the knowledge of the sun's existence.

In conclusion, we may state that our earlier deductions in this paper are reasonably maintained—namely:

1. Pain is a sensation, and not a feeling. It is true pain does give rise to an emotional feeling of displeasure. There are cases where pain even gives rise to an emotion of satisfaction. We have often heard patients say that it felt good to bite on certain sore teeth.
2. There are special nerve fibres with special terminals on the

periphery, which convey impulses to the central system that produce sensations of pain. In other words, there are pain nerves for the skin and teeth at least, just as there are touch nerves, heat nerves and cold nerves.—*Western Dental Journal*, November, 1896.

* * *

ON REPAIRING BRIDGES AND CROWNS BY A PROCESS OF SOLDERING IN THE MOUTH. By H. Baldwin, M.R.C.S., L.D.S. The question of repairing bridges and crowns, which have had their porcelain facings broken, is one which has called forth a good deal of ingenuity, but can hardly be said in any of the usual methods to have found a satisfactory solution. For some years I have treated all the cases which have presented themselves to me by the process of soldering on the new faces with soft solder in the mouth. I have now repaired over thirty cases of bridges and crowns in this way with satisfaction to myself. The first experiments in this direction were conducted with various kinds of blowpipes, and were all utter failures; but as soon as I got to work with a clockmaker's small soldering "iron," I found the operation easy enough. The soldering "iron" is a small copper "bit," attached at right angles to an iron stem, and fixed to a wooden handle. The copper "bit" as sold in the trade requires a little filing down to reduce its width at the point, and also requires bending to an angle of about 45 deg. to avoid contact with the lip. The bending is effected by fixing one end of the "bit" in a vice and striking the other with a heavy hammer. The iron stem, too, of the clockmaker's tool requires shortening, for greater handiness in use. The kind of solder used varies somewhat with the work in hand. In easy bridge cases a fine quality of ordinary soft solder is the best; in more difficult cases, such as Richmond crowns, a lower melting solder is necessary, and this is to be met with in the trade under the name of "pearl" solder, which contains, in addition to tin and lead, bismuth and mercury, and one variety of which softens in boiling water. A medium grade is the one I generally use, as an increase in readiness to melt implies a decrease in strength. The process consists in soldering a "backed" tooth to the pre-existing "back" in the mouth. It would be naturally supposed that the extra back would cause a very undue projection of the tooth, but this is hardly ever so, because in the majority of cases the teeth have been broken by the bite, and it is necessary to place their successors further out

in order to insure their safety; and, again, it is possible always to choose a rather thin tooth and to "back" it with a rather thin backing. It is important to remember that the closer the surfaces of metal come together the stronger will be the union, and therefore it is absolutely necessary to get the two backs well into apposition over their entire surfaces. Those operators who wish to adopt this method, and are not expert in soft-soldering, are advised to practice it out of the mouth, so that no hitch may occur during the operation, as it is the rapidity of the soldering which prevents the heat from reaching the patient in any important degree.

The method of procedure is as follows: A rather thin porcelain flat tooth is selected and backed with No. 7 gold. The pins are cut short and riveted down into countersunk holes, and then still further attached to the back by melting gold solder over them. The back is then filed down perfectly flat and smooth. The old back remaining in the mouth is also trimmed smooth, all prominences caused by the old pins, etc., being burred down. The new tooth is let down till it takes its proper position in the mouth. The new back is "faced" with an excess of "pearl" solder, by means of the soldering iron, which has itself been previously faced with the same solder. A piece of blotting paper is inserted under the bridge (if bridge it be) and allowed to project each way, to protect the gum and palate from radiant heat from the "iron." A roll of bibulous paper is placed in the labial sulcus and a napkin applied in the usual way.

The old back in the mouth is then faced with the same solder by means of the soldering "iron." Hydrochloric acid and zinc is used as a flux. The new tooth is then placed in position, held there by the finger, a small piece of bibulous paper intervening, and the solder is melted by touching the "iron" to the tips of the two backs where the solder comes to the edges. The "iron" must carry a bead of molten solder in its end. The union is known to be complete when the new tooth is felt to suddenly sink down into its exact position under the pressure of the finger. After each application of heat in the mouth the work is *immediately cooled off* with a cold wet swab of cotton wool. Several other details to observe are the following: If the new tooth is to be next to a contiguous live tooth, see that both the backs, old and new, are just free of it, and place a single thickness of blotting paper between. See that the new back does

not extend so far as to touch the gum. Let the back of the new tooth be as large as possible and its lateral edges not bevelled. See that in facing the backs with pearl solder, the solder be carried well over the cutting edges. See that the "iron" is as hot as possible, always provided it be not overheated and the facing of solder spoiled thereby. Test the heat of the "iron" by seeing that it will instantly melt bits of solder when pressed upon them. The iron must be very hot, so as to do the work quickly, and quickness is the soul of the process. When attaching the tooth do not attempt to conduct the heat through the old back, but apply the "iron" to the cutting edges of the backs, so that it comes into contact with the solder previously put upon them. This is the most important detail of all, as *no amount of heat will do the work properly through the old back*. The diagrams show the correct and the incorrect way of applying the soldering "iron."

The melting of the solder between the backs seems to be induced by actual contact of that solder with the molten solder constituting the facing of the "iron." The molten condition is evidently passed on from molecule to molecule, each molecule when falling into the molten state knocking down the one next to it in a way which seems to be analogous to the way in which a row of nine pins may be made to knock each other down, or a row of dominoes set up on end. This explains why the molten solder constituting the facing of the "iron" must be placed against the solder already in the "backs." Mere heat will not suffice.

In this way a complete melting of the solder between the backs is effected, no matter how long the tooth. The length of time required to effect this is about two to four seconds, varying with the size of the tooth.

If the tooth after being soldered on is found to be in an incorrect position, it must be melted off again by again applying the "iron" to the tip of the new back, touching the solder, and pulling it forward with the "iron." The reason for putting an excess of solder on the new back when facing it, is, that when it melts it allows the tooth to sink under the pressure of the finger, and so tells when the melting is properly done, and it also insures there being plenty to fill up all the spaces. The excess is attracted away by the "iron." I have done some cases with teeth backed with dental alloy, but am not sure that the solder attaches quite so well to this

as to gold, but when using gold I find it does not do to use a gold of less thickness than No. 7, as the solder in that case has a bad effect on the gold. In wear, the soft solder does not disintegrate nor suffer in any way, nor does it give rise to an unpleasant taste, but the bite must always be made quite free of the new tooth and of its "back." — *Dental Record, November, 1896.*

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A METHOD OF CURING BY CLEANSING, asepticising and permanently filling putrescent or suppurative pulp-canals at one sitting that *has not shown a failure in three years.* Clinic before New Jersey State Dental Society, 1896, by Dr. L. C. Le Roy, N. Y. Case: Superior central incisor, left side. Some peculiarities developed in diagnosis. Tooth very opaque upon transmission of reflected light; quite badly discolored. Slight soreness peculiar to diseased pulpless teeth. No fistula present. Dr. C—, the patient, gives as previous history that the tooth has been in condition as indicated externally for years. Pulp-canal never entered previously.

After placing on the dam, the operation consisted of opening into pulp-canal. Putrescent odor markedly present, with dark, watery pus. Not the slightest pain until the broach was inserted about one-half the length of tooth, when shock was felt, living pulp encountered. Hemorrhage followed; applications of 50 per cent sulphuric acid for a few moments caused anesthesia and allowed of removal of remaining pulp-tissue. Followed this treatment with a solution of sodium bicarbonate until chemical action ceased.

Pulp-canal then freed of fluid. No real effort at drying, because the moisture left in the canaliculi acts as an auxiliary and permits of more perfect sterilization by the carbolic acid, C. P. (deliquescent crystals), which was used next. This allowed to remain *in situ* until the permanent pulp-canal dressing of eucalypto-percha was prepared, which is done for each such operation by using any of the low heat gutta-perchas with eucalyptus oil (in glass watch-crystal) as a solvent. Tooth then dried thoroughly with bibulous paper, canal points, hot-air blast from syringe and pulp-canal dryer.

This *positively* accomplished, the eucalypto-percha dressing in very plastic state was inserted with smooth broaches until the canal was filled; followed this with a few fibers of cotton carried to the apical foramen and compacted; followed this with a gutta-percha canal point, of the proper diameter, to admit of being carried to, and

compressed in, canal beneath cotton which forces the excess of eucalypto-percha from canal into pulp-chamber. That which remains is taken up by the g. p. point immediately, which expands a trifle (the reverse of chloro-percha) and most positively fills the root-canal. Any oil which remained was removed with alcohol and the cavity lined with phosphate.

The doctor's second clinic was: "A method of obtaining plaster-of-paris impressions and occlusions of the teeth simultaneously for crown or bridge cases, producing models with all the parts in perfect condition."

Operation performed for the patient; first noting condition of all parts, paying attention to the teeth on side of mouth opposite to that of which the impression was desired, as those parts must be the guide when teeth are occluded, while the plaster-of-paris is hardening. Required the patient to open and close the teeth several times so that he closed intelligently when finally required.

In this instance a substitute for impression cup—yellow beeswax (sheets)—was used, the impression cup being improvised of the desired shape and size. The doctor cut from a sheet of wax six inches long a three-quarter inch strip and united the edges, making a ring oval in shape divided midway, with a septum of wax, causing it to adhere to the ring with melted wax. This made a double impression cup or plaster receptacle.

The plaster was prepared and the required quantity placed in one side of the wax receptacle and a similar quantity in the opposite side. The whole being placed in the mouth, the patient was requested to close the teeth, biting through the wax until the teeth antagonize as they would in repose; opening the mouth fractured the plaster. The parts were removed and subsequently inserted into the wax cap, pieces secured by melting the wax cup at places to hold together, varnished and placed in articulator, both impression and bite being filled at once.—*Items of Interest, November, 1896.*

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ENAMEL MARGINS. By Fred Schumacher, D. D. S., San Jose, Cal. Read at Santa Clara Valley Dental Association, November 10, 1896. Nothing is more fatal to the longevity of a filling than the failure of enamel edges, and how often do we see beautiful fillings marred by a fracture or failure of the enamel at the margin,

to repair which means to weaken the filling and often necessitates removal of entire filling, rendering the original work of no avail.

First, in regard to the extent of cutting away the enamel, we must consider accessibility to the cavity, appearance and strength, and we may say retention, although I believe we all agree that a filling dependent upon enamel walls for retention is indeed weak filling.

Different rules are to be applied to the different teeth, as we would not follow out the same rules in molars as in incisors. In all cases of approximal decay in molars and bicuspid the enamel edge should be trimmed away so as to have all edges of the filling accessible to the explorer point, and after the teeth have resumed their natural position the point of contact should be upon the body of the filling, and not at the union of enamel and filling. This may seem in some cases like sacrificing appearance for the sake of durability, but I think such a course much more commendable than sacrificing durability for the sake of appearance.

There are many carefully inserted fillings which have failed at the edges which would have held longer if the enamel edges had been trimmed away more generously. The patient probably wanted amalgam used, considering the saving of time and money, but at the same time objected to showing much of the filling on the buccal or labial side. The result is that the buccal wall is generally undermined by decay in the course of time, depending on the quality of enamel and dentine, and so must eventually be cut away to a greater extent than would have been necessary had the enamel been trimmed away more in the first place. So, by all means see that when the operation is completed the explorer point can be passed over all edges, thus insuring a self-cleansing surface.

We cannot always please our patients by allowing them to dictate to us in this regard or in others. Our own judgment should prevail in all cases, and if a patient wishes to dictate let him understand then and there the matter of responsibility.

Where we have very hard dense teeth, of square shape, the approximal surfaces of which are almost flat and fitted together like a row of bricks, we would find it difficult to extend small cavities so as to bring the edges free from contact with the neighboring teeth. In these cases we must necessarily leave the larger part of the cavity hidden. But here we see exemplified one of the rules of an allwise providence, such teeth as just described being, as a rule

of the very hardest structure and in the mouth of a well-organized and healthy patient.

But no matter of what shape the teeth, if they seem to be of loose structure with chalky enamel, the enamel edge should be carried out to where it would be self-cleansing, subject to the action of the lips, tongue and cheek muscles. It is perhaps difficult to describe variously shaped cavities without the aid of charts and diagrams, but as we are considering only general cases it is unnecessary.

One very important phase of the work here presents itself—the disposal of overhanging edges of enamel, cusps, etc. In a large approximal cavity in a molar or bicuspid the temptation is often to leave the cusp intact and depend upon oxyphosphates to strengthen the same. But a large proportion of such cases will present themselves in time with the questionable cusp entirely gone, not so much from recurrence of decay, but on account of the enamel having split at its weakest point. It is safer to use the chisel freely and depend on a liberal groove cut into the grinding surface for retention. By making such retention we can fearlessly trim away all weak enamel and not have to depend upon deep cutting into sensitive dentine.

Of course such a method opens up a field for objection on the part of patients, it being difficult sometimes to explain what seems to them a needless destruction of tooth substance and necessarily more pain. There are still a few patients of that class who think that all that is necessary is to have the hole plugged up without much excavation or preparation. But the true dentist will have in view only the permanency of the filling and the future comfort of his patient.

While the operation is in progress the patient might be pleased to have the work hastened and the filling hurriedly inserted, thereby saving momentary pain; but it must be remembered that any recurrence of trouble afterward will be brought home to the unhappy dentist, should he willingly slight the work in order to get rid of a troublesome patient; for, in doing so, he does the worst possible injury to himself. Therefore, be not led into leaving thin enamel edges standing simply because it means a little time and trouble to cut it away.

In incisor fillings, speaking of approximal decay, the majority of failures are at the palatal edge, especially when this edge has not

been carried down so as to be accessible from the palatal side. Where the cavity is of considerable extent it is safer to use the chisel freely from underneath, so as to have sufficient room to fill partially or wholly from that side, as the case may be. At any rate it is a great advantage to be able to finish the palatal portion of the filling from the palatal side, and where this trouble is taken the result generally repays the effort.

In regard to the treatment of the very edge itself, the rule is to bevel all enamel margins, and I think every careful operator bevels enamel edges to a greater or less extent. In small shot-hole fillings we are often tempted, on account of the ease of the work and its simplicity, to leave the edge as it is left by the bur; but it is in just these easy cases where, confidently working speedily, we shatter the enamel edge at one point or another. By thoroughly beveling the edges of all cavities, large or small, we avoid the common cause of failure in gold fillings, the shattering of the enamel edges with the plugger-points. These few points—that is, keeping the point of contact away from the union of filling and enamel, and the thorough beveling of all edges—constitute, in my opinion, the most important of precautions in cavity preparation.—*Pacific Stom. Gazette, November, 1896.*

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A STUDY OF THE RELATION OF THE FRONTAL SINUS TO THE ANTRUM. By Thomas Fillebrown, M.D., D.M.D., Boston, Mass. Read before American Dental Association, August 5, 1896. My attention was especially called to the relation of the frontal sinus to the antrum some four years ago, by difficulties I met with in inducing a cure in several different cases of empyema of the antrum. In each of these cases the frontal sinus was plainly involved, and seemed to be connected with the cause of the antral trouble. Several of my troublesome cases were sent to me by a specialist in the treatment of the nose and throat, whose skill they had defied for over two years. I will briefly describe five cases.

Case I.—Male, age thirty-eight, right antrum affected. This patient had suffered from rhinitis for a considerable time, and I think the ethmoidal cells were somewhat affected as well as the right frontal sinus. The patient was radically relieved by operation, and the membrane of the antrum made healthy by treatment, except at the foramen as it entered the meatus of the nose.

Case 2.—Male, age forty-two, a dentist. Offensive discharge from left nostril for nine years. I found left antrum filled with pus, region of left frontal sinus swollen and somewhat red and sore. He suffered from constant headache. My treatment immediately relieved him, and he has been able to keep himself entirely comfortable ever since, and has declined operation on the frontal sinus for a radical cure.

Case 3.—Female, age about thirty. For two years had offensive discharge from left nostril. In this case discomfort almost amounting to pain, and soreness over the left orbit told plainly of inflammation in the frontal sinus.

Case 4.—Female, age thirty-two. Right maxillary and frontal sinuses affected.

Case 5.—Female, age thirty. Right antrum and frontal sinus involved.

These last two cases exhibited about same symptoms as case 3.

Each of these cases I treated by making a good-sized opening through the region of the tooth-sockets, thus affording drainage from the dependent parts of the cavities. In each case teeth had been lost entirely, or only roots remained, as no teeth had to be sacrificed to permit the operations.

Antrum No. 1 was entered through the socket of the second bicuspid; No. 2 through the second molar region; in No. 3 the absence of the first bicuspid afforded opportunity; No. 4 was entered through the sockets of the first molar, and No. 5 through the location of the second molar.

I made the openings as large as a common lead pencil, and made a hard rubber plug attached by a clasp to a neighboring tooth to keep the artificial canal patulous and render the atmospheric condition normal. The plugs could easily be removed by the patient, and, after cleansing, be as readily replaced.

I have tried both the open tube and the solid plug, and much prefer the latter. It is hardly practical to use a canula large enough to syringe through freely and not also to allow the circulation of air, which is not a natural condition. The plug being easily removed, both plug and cavity can be washed thoroughly clean. A tube cannot be made clean without much difficulty.

The results in the cases I have described are as follows: No. 3, cured; has been entirely well for more than a year. No. 5 has

steadily gained and is nearly well. No. 4 improved for a year, then sickened and died from other troubles. No. 2, of nine years' standing, keeps himself comfortable, with steady but slow improvement. No. 1 keeps himself comfortable by a daily syringing of the cavity. In each case, with a probe wound with cotton, I could explore the whole cavity and locate any pus-producing spots, or any collection of secretions; and in cases Nos. 1 and 5, by passing the probe through the foramen into the nose, I constantly found pus, which was either secreted at that point or came down from the sinus above. The last I have since found to be entirely probable, as I shall show later.

I have never found any difficulty in inducing a cure of empyema of the antrum in a few weeks, when the cause was of purely dental origin. This being the fact, and the frontal sinus in these cases being so evidently affected, I was led to conclude that there must be a very much more intimate relation between the two cavities than that described by anatomist or surgeon, for I could find neither an anatomist nor a surgeon who could give me the least encouragement that my surmise was correct.

During the past winter I succeeded in verifying my opinion. Professor Dwight, of the Harvard medical faculty, kindly offered me an opportunity to examine several specimens in the Harvard Anatomical Museum and enabled me to obtain others especially for my purpose, and gave me access to his extensive library.

I believed the infundibulum had some direct connection with the antrum and discharged its secretion directly into it, and an examination of eight different specimens showed that to be the case. The infundibulum, instead of terminating in the middle meatus, continues as a half-tube, this half-tube terminating directly in the foramen of the maxillary sinus. This was the case in all of the eight specimens, and in seven of the specimens there was a fold of mucous membrane which served as a continuation of the unciform process and reached upward, covering the foramen and forming a pocket which effectually prevented any secretion from the frontal sinus getting into meatus until antrum and pocket were full to overflowing.

The pocket I have mentioned has been noticed by a few writers, but has been considered by them as an anomaly. If an anomaly, it is remarkable that I should have found it in seven out of eight specimens obtained at random, where the eighth specimen, in which

it is absent, is plainly abnormal, as the foramen is very large and very irregular.

The continuation of the infundibulum is present in every specimen, and if the pocket is abnormal, my examinations show that it exists often enough to presume it to be present in every case where the frontal sinus is affected in conjunction with the antrum and the discharge from the antrum will not cease.

As I remarked before, few have mentioned the physiological connection of the cavities. Professor Dwight says, in answer to my request: "I have looked the matter up and am convinced that the infundibulum opens most directly into the antrum, and that the common opening of the two into the middle meatus is practically on the inner side of the infundibulum." Tillaux points out "that if fluid be injected into the frontal sinus, instead of running into the middle meatus it passes in great part into the antrum;" and Merkle describes a fold of mucous membrane under the common opening, and accounts by this for the occurrence described by Tillaux. Dr. M. H. Cryer mentions, in his valuable paper read before this association last year, that fluid may enter the antrum from the frontal sinus, but he makes no mention of the intimate connection which I have observed. Prof. Harrison Allen, in a paper published in the *Dental Cosmos*, May, 1895, discusses the proliferation of empyema of the frontal sinus into the antrum, and of the coexistence in these cavities of this condition. Dr. J. H. Bryan, in a paper published in the Transactions of the American Laryngological Association, 1895, mentions the fact of occasional communication between the two sinuses, but considers them anomalies. Further than this, I find no mention of this condition.

I trust the attention of anatomists may be given to this subject, and specimens enough may be examined to determine whether the above-described conditions be an anomaly or one of the normal arrangements, and in what proportion of cases it occurs.—*Dental Cosmos*, November, 1896.

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PHASES OF THE MORTON SYSTEM OF DENTAL CATA-PHORESIS, with special references to new appliances for bleaching of devitalized teeth. Clinic before the New Jersey State Dental Society, 1896, by Dr. Hollingsworth, Santa Barbara, Cal. The subject presented was a young lady having a devitalized and badly

discolored superior right central incisor. On the mesial surface was a large gold filling, which was removed in order to secure the necessary surface of dentine. When this had been done it was found that the root-canal had been previously filled, otherwise root filling would have been in order, to prevent the electric current from following an easier path through the apical opening.

A 25 per cent solution of pyrozone (aqueous) was the agent used. The tooth was completely surrounded by an especially devised rubber nipple, of rubber-dam thickness. Opposite the mouth of nipple a small opening was made, as in the application of rubber-dam. By means of an expanding instrument passed through the neck, slightly beyond the hole made by punch, the nipple was so expanded as to allow applications to the tooth. After being secured by silk ligatures, a small glass tube containing a platinum coil and supplied with a connecting metallic tip was inserted into the neck or projecting end of the nipple.

The metallic or terminal end of the tube presented a tapered opening through which the pyrozone was introduced, and into which was fitted a tapered metal plug, forming the terminal of the wire leading to the electric supply. To facilitate the introduction of the pyrozone into the glass tube, a special device was used. This was two connected rubber bulbs, having a common nozzle, duplex in character; that is, the longer nozzle of the one bulb passed through the other bulb and nozzle in such a manner as to preserve separately the function of each.

The outer bulb was filled with the liquid in the usual manner; the other was then slightly compressed and the common nozzle inserted into the tube opening, which it closely fitted. The compressed bulb was then released, thus causing a collapse of the nipple by the suction produced. While in this condition the bulb containing the pyrozone was compressed sufficiently to fill the nipple and tube, any excess of liquid being drawn into the lower dry bulb by reason of suction. The tooth being now surmounted by the bleaching agent, the syringe or injector was removed and the paper plug forming the terminal of the positive wire connecting with the electrical supply was inserted. The cathode was placed in the hand of the patient.

The electricity was applied with an initial voltage of thirty, current indicated at this time (one and a half milliamperes) proved, according to previous experience, to be somewhat above the aver-

age, indicating a leak. The point of leakage was discovered and, by the application of sandarac varnish, effectually stopped for the time. The voltage was then raised to sixty, the current then remained at one and a quarter milliamperes, about the same as when the voltage was at thirty. Any increase of current above this amount, in the effort to hasten the operation, was objected to by the patient. As a slight leakage was again indicated by the meter, the current was continued for forty-five minutes, instead of thirty minutes, the time usually allowed in average cases. The current was then turned off and the electrodes and appliances removed.

Previous experience by the operator in this method of bleaching has led him to believe that the bleaching action of the agent continues for several hours after the cataphoric action has ceased, which theory was supported by the fact that when the tooth was examined some time later it was noticeably lighter in shade, and so nearly approximated the shade of the adjoining normal teeth as to be practically unobservable.—*Items of Interest, November, 1896.*

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DURAL IN THE LABORATORY. By Dr. Erich Hoerstel. Every operator who constructs large metallic-base dentures has certainly often desired a material which would harden the plaster model, in order that its identity would be better preserved while molding in the sand, and also to insure its perfect continuity during cleaning or subsequent use. At present the soft models do not thoroughly withstand the "fitting process," and in vulcanite work—especially in partial cases—the few plaster teeth are not sufficiently strong to resist the abrading influence of adjusting the denture, and not infrequently break off. In vulcanizing on soft models the vulcanite penetrates the latter, giving an unnecessary roughness on the contact surface of the base-plate, and the slight ridges thus produce undesirable results, irritating the mucous membrane of the mouth. The softness of the model is often the direct cause of porous bases.

I have employed a solution of borax in connection with the plaster mixture, but found it only partially successful. A short time since a preparation came into the market known as "dural," which seems destined to be of service in removing the difficulties in question. It is a crystallized powder which readily dissolves in hot water and becomes a clear liquid. The method of employment is simple: The plaster model is immersed and allowed to remain in the "dural solu-

tion." It requires about ten or fifteen minutes for the model to become completely saturated. Extract the model and permit it to thoroughly dry. By this process the plaster model absorbs about 25 per cent of the liquid dural and is coated with a semi-transparent film which is hard and completely resists ordinary wear. I heartily recommend it to the profession.—Translated by Dr. B. J. Cigrand from *Zahnaerztliche Rundschau*, November, 1896.

* * *

DUPLICATE MODELS.—In order to produce duplicate models—and they are quite necessary and practical in cases of regulation—employ the following composition: Lime, 10 parts; fine sugar, 10 parts, and glycerin, 12 parts. Mix this thoroughly, heat, and press the original model into the compound, and after the latter has become completely hardened, deliver the model. Perfect duplicates can be made in the mold thus obtained.—Translated by Dr. B. J. Cigrand, from *Zahntechnische Reform*, November, 1896.

* * *

THE HERBST DENTAL PRIZE. The following is a letter about Dr. William Herbst, of Bremen, concerning a prize he offers for the solution of a dental problem: It has come to the knowledge of the profession that at the sixty-eighth meeting of the German Naturalists and Scientists, held at Frankfort, our collegian, Dr. Herbst, offered a prize of 1,000 German marks, and deposited same at the banking house of J. Schultze & Wolde, of Bremen, to the person who shall discover a substance or agent which will obtund sensitiveness while excavating dentine, and thus make the labor of the dentist less tedious and render less pain to the patient.

Conditions to contestants are as follows: The agent must not be a secret remedy and must be new—that is, it must be other than any now in use; it must be reliable and take quick effect; it must act immediately and not some few hours subsequent to the application; its action must be limited to the sensitive dentine, and must not under any circumstances attack the dental pulp. In short, the agent or remedy must, in the full sense of the word, be perfectly non-destructive in order that its anesthetic action on the tooth structure be unaccompanied by ill results. The time allowed shall be one year, beginning October 1, 1896, and all practitioners are invited to take part in the contest.

The tests and examinations shall be conducted by the author of the prize and also by the dental departments of the German universities, and at the selection of the latter there shall be chosen three persons who shall determine whether or not the agents fully comply with the foregoing specifications, thus safely insuring the prize to the discoverer.

In the event that the most satisfactory remedy does not fulfil the necessary requisitions, and yet has worth or merit in dental science, it has been decided that one-half of the prize shall be awarded the discoverer, and the balance of the money and its accumulated interest shall be applied for some other purpose in the interest of dental art.

All dental journals and periodicals which are devoted to the advancement of our profession will please acquaint their readers with this announcement; and all who are interested in the problem may for further information apply to Dr. Jessen, Strassburg.—Translated by Dr. B. J. Cigrand, from *Deutsche Monatsschrift*, November, 1896.

THE POPULATION OF THE EARTH.—The quinquennial census of different nations was recently completed. From 1874 to 1895 the total population seems to have increased from 1,391,000,000 to 1,480,000,000. The increase at the rate of 5 per cent should give 1,549,000,000 in 1900 and 2,548,000,000 in the year 2000. The fear expressed in Malthus' essay on population that in course of time one portion of the population will be reduced to famine, seems not incredible, since the producing powers of the soil are limited, while those of reproduction of species are practically without limit.—*Med. Record*.

CONGENITAL INFERIOR INCISORS.—The undersigned was called February 22, 1896, to Mrs. L—— who was in her second confinement and at the eighth month of gestation. Twins were born and on examination one of them was found to have two congenital inferior incisors. The teeth were projecting probably one-sixteenth of an inch above the gums, but were very loose and movable, and could have been removed with the fingers. The children were both small, poorly developed and rachitic in appearance. One tooth disappeared at the tenth week and the child died the twelfth week. This occurred suddenly and away from home. The physician who was called found it in convulsions and considered death due to meningitis. The remaining tooth was removed and given to me. The case was seen at various times by a large number of medical students and physicians, was shown at the April meeting of the Obstetrical Society of Cincinnati, and the tooth was presented to the Cincinnati Academy of Medicine. None of the gentlemen had ever seen a similar case. Margitot, Schurig, Pliny, Bartholin, Ballantyne, Vargas, Buist, Mackenzie, Forchheimer, Jacobi and Pierce have written on the subject.—E. S. MCKEE, M.D., in *Medical Record*.

Letters.

NEW YORK LETTER.

NEW YORK, December 18, 1896.

To the Editor of the Digest.

MR. EDITOR:—Patent suits are in vogue, Ryncar vs. Evans. Suits against millionaires for non-payment of professional services rendered by experts. Something rotten in Denmark when men will combine to prevent their fellows in the same calling from receiving their just dues. This may be fun for the boys but it is death to the frogs. It is marvelous how much of the animal nature there is in mankind. We were impressed by some illustrations in a daily paper recently, which gave some familiar types of faces and the heads of certain fish that occupy the new aquarium in our old Castle Garden. They showed that we are not far removed from the animal, but it seems a pity that some people encourage this side of their natures rather than repress it.

While we may be for a time a little piqued by antagonism, yet it is divine to remember that if we look for it we can find something good in every person. Not long ago a rather pompous man asked us if we meant everything good we said about people. We asked him: "How do you take it when we say good things of you?" We were chagrined at seeing a "nasty" reference to a grand man who has passed off the scene of action. It was published in the proceedings of the recent meeting of the American and should never have been allowed a place in any journal whose editor values a good name. Shakespeare says that he who steals a man's good name steals that which cannot be replaced.

We call the attention of journal readers to Dr. S. G. Perry's article on "Professional Fees." This touches the true inwardness of the subject better than anything we have yet seen. There are some things said which should become general in practice, such as that the rich should pay more than their less fortunate brethren, and that skill should gauge the scale of fees. We agree with the writer that a cash practice is far better. It is better to have at once what is due us than to live in hope of getting it sometime, for the latter, as the late old Dr. John Allen used to say, is very disappointing.

Every time we deviate from a cash payment we regret it, for "it is hard to pay for a worn coat." We wonder if students are taught much along these lines. They should be.

Is Dr. Foster Flagg in any danger? We see he is between two fires (journalistic).

An occurrence recently recalled the Congress at Chicago during the Fair. That visit will always be green in our memory, and we believe that neither the Dental Congress nor the Fair will ever be beaten until another Columbus discovers some place bigger and more energetic than Chicago.

How many of us realize that, according to the rightful record of time, all scholars agree that this month ends the 19th century? It is truly a great event, the anniversary of the Christian era.

The First District Society "raised the wind" this month with ten horse power for blowing the chips out of excavations. Is not the use of so much power carrying things to extremes? But dentists must blow, if nothing but their own inventions.

The Odontological Society has been so well served by the administration of the past year that they have decided to try it for another term. The event of the season occurs in January; Heitzman and Atkinson will be absent, but there is a rare treat in store.

With Christmas greetings and best wishes for the New Year,

Cordially, NEW YORK.

LETTER FROM THE NORTHWEST.

DULUTH, MINN., December 15, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—With impartial brightness the semi-arctic skies in Minnesota are just now reflecting many strange things to the dental observer, who is intent to watch the coming and going and the everchanging kaleidoscopic effects of aurora borealis. Indeed, what more appropriate light could be imagined than this with which to follow the endless changing of positions among our leaders; for we see that the successful politician of yesterday cries out against the wire-pulling of to-day; that those whose voices are loudest in the support of dental legislation in the midsummer meetings spend the hours of midwinter lobbying for their defeat. The once satisfied examiner of expired term fighting tooth and nail his successor and

ardent imitator upon the dental board, finding most bitter fault with the methods he has helped to formulate. The Napoleon who has conquered the foes of an oppressed profession himself an object of suspicion, lest he in turn become the oppressor. Youths in the arms of alma mater nurtured upon the precepts of a code of ethics fitting the high ideal of a true profession, and by example shown a policy of brazen and unblushing advertising, the familiar accompaniment of successful modern college management. That hairs grown gray in the upbuilding of our institutions may pass on to give way to a newer regime without general comment. While, of the loyal legions who claim a kinship to the practitioner of medicine, but a corporal's guard can muster annually to defend their title before the section of Oral Surgery in the association of the medical fraternity of America.

All this and much more the "heavens are telling," but to the northern eye, accustomed to atmospheric vagaries, these things mean nothing of discouragement—merely a paradoxical condition incident to the wonderfully rapid advance of our progress; the ill assortment of the results of individual effort all tending, as we believe, to the ultimate common benefit. We are too near the north pole and the possibility of a peep over to the brighter side, or perhaps to angelic influence, by reason of proximity to the clouds that obscure seraphic faces, to hold any feeling but one of charitable optimism.

Coming nearer to the incidents about us we find the Delta Sigma Deltas have just held a most successful meeting at the State University Dental School, where the advent of another fraternity has made unusual activity, and we know that the redoubtable Weeks was very much in evidence as usual.

Every morning curious and sometimes anxious eyes scan the daily papers to discover if Dr. C. H. Robinson, of Wabasha, or some unknown steed of ebony hue has received the appointment upon the board of examiners.

We also note a general tightening of girths, and other preparations for battle in view of the convening of our law-makers, lest some misguided member be induced to alter the "Act to Regulate the Practice of Dentistry in the State of Minnesota," the pride of every honest dental heart. The Minneapolis Dental Society listened to a most interesting verbal and manual demonstration of the utility and

beauty of porcelain bridge-work by Dr. Kramer at its last meeting; but alas! of the St. Paul Dental Society we hear nothing.

Rumors are afloat of great things that are going to happen among the associated dentists of southern Minnesota at their next meeting, and we believe them true. They're all alive down there.

Word comes from the border land of Dakota, where they divide the duty of looking out for the "fly by night," unlicensed dentists, who flit from state to state, with the arduous task of cultivating the favors of fair applicants for divorce, who seek the Mecca of the mismated, that notwithstanding these diversions much wisdom will be forthcoming at the council of their chieftains this next year.

The advent of letters of invitation to take part in the grand clinic of the Chicago Dental Society has caused a general examination of bank balances, and a burnishing up of fast tarnishing ideas, for the dentist of the northwest has not reached the ultra-scientific stage of subdivision into inner and more fashionable circles of dental association, and is always pleased to acknowledge with gratitude the Chicago Dental Society as the fountain head of much of his valuable information.

Dr. J. H. Martindale, our former collaborer, now devoting himself to nose and throat, has evidenced continued interest by promising to read a paper soon before the Minneapolis Dental Society.

"Watchman, what of the night?" "The morning cometh," is the answer from the hill-tops of Minnesota, and it is believed that the time is ripe for legislation that shall give control to a board of examiners who shall be chosen by reason of their fitness mentally rather than politically. Minnesota is ready to rally to the support of a national board of examiners whose duty shall be to examine nationally. Who are ready to join her?

With the season's greetings of peace and good-will to all,
Truly yours, G. V. I. BROWN.

SEPTIC SURGERY.—We have left unwashed those things which we ought to have washed, and we have handled those things which we ought not to have handled, and there is no health in us.

THE LATIN PART OF THE BODY.—Medico Lecks—"The deceased was shot between the hyoid bone and the insertion of sterno-cleido-mastoid muscle." District Attorney Rockaway—"Do I understand you to say that wounds in this Latin part of the body are generally fatal?"—*The Journal*.

The Dental Digest.

PUBLISHED THE
TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

CLINIC OF CHICAGO DENTAL SOCIETY.

We would call the earnest attention of our readers to the above meeting, a detailed notice of which will be found on page 734. The clinics and papers will be valuable and interesting, and the Chicago dentists will endeavor to make the visit of all who attend pleasant. If you are not too far distant it will be well worth your while to be present.

CLOSE OF OUR SECOND VOLUME.

This issue will complete the second volume of the DIGEST. When this journal was started it hardly seemed as if there was room for another dental publication, but by inaugurating and adopting an entirely new plan of action, and by making the DIGEST preeminently the journal of, by and for the dentists, it stands to-day with a larger following and more supporters than any other dental journal published.

Without overstepping the bounds of truth, we can safely say that the DIGEST contains more matter of value to the dentist than any other journal, which is one cause of its success. Another and probably the most important reason why the profession appreciate and support the DIGEST is this—the Trust do not advertise in it, nor will they allow any of their members to do so. Consequently, not being under obligation to any unlawful combination, nor the organ of any dental supply house, this journal can criticise and condemn whom or what it pleases. No other dental journal can truthfully say the same.

However, since we derive no profit from advertisements in that quarter, we must look to the dentists for both intellectual and financial support. We have received much help and encouragement from

the profession during the past year, and would bespeak a continuance of the same. Thanking one and all for their assistance, and trusting that more will join the ranks of coworkers in the near future, we close the second volume with best wishes for the new year.

FUTURE WORK OF PROTECTIVE ASSOCIATION.

In the November issue we published in full the decision of the United States Circuit Court of Appeals on the Low bridge patent, which sustained the decision of Judge Wheeler. And in the same issue gave a synopsis of Judge Wheeler's decision, which had previously been published in full.

At the time of the publication of that editorial the mandamus had not been returned to us and the case was not out of court; since then we have been in court, had the mandamus returned, and, with the exception of some minor details regarding court costs, etc., the litigation on the Low bridge patent is at an end in that federal district, with the advantages decidedly in our favor. And while suit can be brought on this patent in other federal districts, we have not heard of any move being made in that direction. However, should the parties interested in the prosecution see fit to bring suits in other federal districts against members of the Protective Association the suits will be taken care of and we have no fear but that the result will be favorable to us.

There are still pending suits that have been brought against members by other patent claimants besides the International Tooth Crown Company, but the prosecution of these cases has not of late been pushed, from which it will be seen that the work of the Protective Association relating to license patents is at a standstill, with our side victorious all around.

The question of whether the Protective Association should be kept in existence has recently been discussed in several dental meetings and the unanimous decision in each case has been that it must be kept alive. The association has been in existence nine years, and from a few weeks after the first circular was issued, announcing its purposes and plans, there has been an almost constant addition to its membership, but nothing like in numbers what its merits deserved. However, great movements are slow to be understood, and we expect to see the day when every reputable practitioner will

not be regarded in the right light until he has joined the Protective Association.

Space will not allow us to give here a history of the work of the association and the good accomplished by it, but let it be remembered that from the beginning the great annoyance the profession had been suffering was done away with, and the money saved can only be approximately estimated. We have placed the amount saved at \$1,000,000 per year. In connection with this estimate it must be remembered that when the association was organized there were no less than five different patent companies seeking to collect royalty from the profession on various patent inventions. Some had one claim, others five, others twenty, and still others had double that number. If a million dollars seems too large a figure take half that amount, which is certainly a low estimate. We believe we are not overstepping the bounds of modesty when we say that the organization has been of great usefulness and benefit to the profession. The future work no one can see, but certainly there will be great work yet for the association, and to make it complete every self-respecting practitioner, who has not already done so, should send in his ten dollars and unite with us. Let any man dispute these propositions successfully if he can.

A history of the work thus far accomplished, a complete statement of the finances and an outline of the future policy will be furnished the members and perhaps the entire profession in the near future. And we shall then demonstrate that it has paid to cooperate and protect each other.

Book Reviews.

PRACTICAL DENTAL METALLURGY. A Text and Reference Book for Students and Practitioners of Dentistry, embodying the Principles of Metallurgy and their Application to Dentistry, including an Addendum of Collateral Literature, with Experiments. By Joseph Dupuy Hodgen, D.D.S., Assistant to the Chair of Dental Chemistry and Metallurgy, University of California, College of Dentistry; late editor of *Pacific Coast Dentist*. San Francisco, The Hicks-Judd Company, publishers. 1896.

As stated in the preface, this volume is an outgrowth of the exigencies arising in the class-room and laboratory experience of the author as an instructor in dental metallurgy during the past several years.

This statement is well borne out by the character of the book. It is eminently practical in method and well adapted for use, not only as a laboratory manual, but as a text-book. The principles of dental metallurgy are clearly set forth and illustrated by well-chosen experiments. The experimental method of instruction is interwoven with the whole work, serving not only to illustrate the principles treated, but, in connection with each department of the subject, a series of typical operations is given which, if practically carried out in a metallurgical course, could not fail to be of the utmost value in training the student in this important branch.

The author clearly recognizes what is, perhaps, universal or nearly so—viz., the reluctance with which the majority of dental students take to the study of chemistry and metallurgy. Dr. Hodggen's book is a presentation of a phase of the subject by a method which, if it were more generally pursued, would do much toward overcoming the reluctance alluded to.

The work is not beyond criticism in some of its details, but where such a mass of matter has to be dealt with, this is to be expected in a first edition. As a whole, it is to be commended both for its method and its matter, which are most excellent.—*Cosmos*.

TO REMOVE FISH BONES FROM THE THROAT.—Fish bones can sometimes be expelled from the throat by giving from four to six ounces of milk, and forty minutes later an emetic dose of zinc sulphate. The vomit of coagulated milk carries the bone before it as a rule.—*General Practitioner*.

CONTAMINATION OF LIQUID EYE MEDICINES.—Dr. Clough (*Journal of Medicine and Science*, October, 1896) says: "A fruitful source of contamination of liquid eye medicines is the common rubber-bulb dropper. Many a solution over which much care has been exercised to render it stable soon becomes worthless through these little miscreants. Their mischief lies in the fact that many of them—the white variety in particular—are coated with a flour-like film, which becomes detached the instant any fluid touches it and diffuses itself, in an insoluble state, throughout the contents of the bottle in which it is used. Hence, care should be taken that the pharmacist either dispense droppers free from such objection, or else obviate the difficulty by careful cleaning before inserting into the bottle.

Notices.

CHICAGO ODONTOLOGICAL SOCIETY.

The annual banquet and meeting of the Odontological Society of Chicago was held at the residence of the president, Dr. C. S. Case, 5107 Kimbark avenue, on the evening of November 17, 1896.

The address of the president on the work of the year was generally discussed by all present, and the election of officers for the ensuing year resulted as follows: President, C. N. Johnson; Vice-President, J. G. Reid; Curator, P. J. Kester; Secretary and Treasurer, L. L. Davis; Member of Executive Committee for three years, C. S. Case.

After a delightful evening, the meeting adjourned to meet the third Tuesday in December at a place to be designated by the president.

L. L. DAVIS, Sec'y.

CHICAGO DENTAL SOCIETY CLINIC.

The Chicago Dental Society will celebrate its thirty-third anniversary Monday and Tuesday, February 1 and 2, 1897, by giving a clinic with about twenty-five operators each morning from 9 to 12 a. m. Papers will be read Monday afternoon and evening and Tuesday afternoon, closing the exercises with a dinner at 6:30 p. m. Members of the profession are cordially invited to be present. Headquarters for visitors will be at the Palmer House, where special rates may be obtained.

This will be the first attempt since the World's Fair on the part of Chicago dentists to entertain their friends, and they hope to have a large attendance.

Full programs will be issued about January 15, giving the location of clinic rooms, etc.

Clinic Committee: E. D. Swain, J. W. Wassall, Louis Ottofy, D. M. Cattell, A. W. Harlan, Chairman, 1000 Masonic Temple.

LOUIS OTTOFY, President.

A. H. PECK, Secretary.

PROCEEDINGS OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(Continued from November DIGEST, page 681.)

AFTERNOON SESSION, AUGUST 4, 1896.

Vice-President Noble in the chair.

Roll-call of states:

Alabama	T. P. Whitby.....	Selma
	J. A. Hall.....	Collinsville
Colorado	W. E. Griswold	Denver
Connecticut.....	George L. Parmele.....	Hartford

Delaware.....	D. M. Hitch	Laurel
District of Columbia.....	Williams Donnally	Washington
	M. F. Finley.....	"
	H. B. Noble.....	"
Georgia	A. G. Bouton	Savannah
Iowa	J. T. Abbott	Manchester
Kansas	A. W. Davis.....	Holton
Maryland	A. C. McCurdy	Baltimore
Massachusetts.....	J. Searle Hurlbut.....	Springfield
Nebraska	George S. Nason.....	Omaha
New Jersey	F. C. Barlow.....	Jersey City
	G. Carleton Brown.....	Elizabeth
	George E. Adams.....	South Orange
	Charles A. Meeker.....	Newark
Ohio	F. H. Lyder.....	Akron
Pennsylvania	J. C. Greene.....	West Chester
Wisconsin.....	Charles C. Chittenden.....	Madison

Minutes read and approved.

Secretary read a letter from the Pittsburgh Dental College asking for recognition. Referred to Committee on Colleges.

Motion by Dr. Brown:

Resolved, That hereafter all boards, members of this association, accept the list of reputable colleges of the National Association of Dental Examiners as the official list of their respective states; and, further, that this association views with approval the efforts of the different state boards in their willingness to carry out the recommendation made by this association on March 31, 1885, whereby a diploma from a reputable dental college was to be considered the only evidence of qualification to state examination; and we urge the states having laws in conflict with this recommendation to renewed efforts for their amendment.

Carried.

Secretary read a letter from the Omaha Dental College asking for recognition. Referred to Committee on Colleges.

Secretary read a letter from the Dental Department of the Cleveland (Ohio) University of Medicine and Surgery asking for recognition. Referred to Committee on Colleges.

Secretary read a letter from the Dental Department of Howard University, Washington, D. C., asking for recognition. Referred to Committee on Colleges.

Dr. Bouton, of Georgia, presented a resolution:

Resolved, by the National Association of Dental Examiners, That no State Board of Dental Examiners will be recognized by this association whose

members are connected with a dental school as professors, clinicians, lecturers, demonstrators or in any other way whatsoever, or who shall deliver lectures or give clinics by invitation in any dental college.

Referred to the Committee on Codifying the Rules, Dr. Faught, chairman.

Committee on Colleges commenced the second portion of their report; the first part was the report of the charges of the Kansas City Dental College against the Western Dental College of Kansas City.

Moved by Dr. Brown the association go into executive session as a committee of the whole and the Vice-President preside. Passed.

Dr. Davis, of Holton, Kan., spoke on the subject and said both colleges were doing good work. The trouble was brought about by outside people and from students' talk of how easy they can get through the college.

Dr. Abbott spoke of examining the two schools in 1895 and was well pleased with both and thought they were well equipped for good work.

The Deans of both colleges were present and at stated times defended their respective colleges.

Resolution by Dr. Parmele, passed by the committee of the whole:

"It is the opinion of this association that, according to the evidence submitted, the Kansas City Dental College did right in rejecting applicants, etc.

"And on the other side the evidence submitted by the Western Dental College shows that the candidates passed their examinations creditably.

"This association, however, considers neither examination sufficiently rigid to constitute a proper preliminary examination."

Adjourned from the committee of the whole and the Vice-President left the chair, the President taking his place.

Resolution offered by Dr. Parmele:

Resolved, That this association recommend the clause exempting dentists from the application of the Medical Practice Act of Congress for the District of Columbia as an appropriate and indisputable definition of the field and scope of dental practice, allowing progressive expansion of the dentist's function co-incidentally with the advance of dental education, and, as such, suitable as an exempting clause of State Medical Practice laws, and also, as a definition of dentistry in dental laws for the guidance of legal tribunals. The clause reads "That nothing in this act shall be construed to interfere with the graduates of standard dental colleges in the exercise of their profes-

sion to the extent and within the limits of the curriculum of such standard dental colleges."

Resolution passed.

Secretary read a letter from the Dental Department of the Milwaukee Medical College, for recognition. Referred to Committee on Colleges.

Secretary read a letter from the Dental Department of the Tennessee Medical College, Knoxville, Tenn., for recognition. Referred to Committee on Colleges.

The resolution by the association to the dental faculties, relating to the abolition of beneficiary scholarships, was passed by that body, and the letter is as follows:

Saratoga Springs, August 4, 1896.

To the National Association of Dental Examiners,

Gentlemen:—The resolution referred by your body to the National Association of Dental Faculties, relating to the abolition of the practice, on the part of dental colleges, of matriculating so-called "beneficiary" students, was adopted.

Yours very truly,

LOUIS OTTOFY, Sec'y.

Adjourned until 9:30 a. m., Wednesday, August 5, 1896.

SESSION OF WEDNESDAY, AUGUST 5—9:30 A. M.

President Abbott in the chair.

Roll of states called.

Alabama.....	J. A. Hall	Collinsville
	T. P. Whitby	Selma
District of Columbia.....	Williams Donnally.....	Washington
	M. F. Finley.....	"
Iowa.....	J. T. Abbott.....	Manchester
Maryland.....	A. C. McCurdy.....	Baltimore
Massachusetts.....	J. Searle Hurlbut.....	Springfield
New Jersey.....	F. C. Barlow.....	Jersey City
	G. Carleton Brown.....	Elizabeth
	George E. Adams.....	South Orange
	Charles A. Meeker.....	Newark
Pennsylvania.....	J. C. Greene.....	West Chester
Virginia.....	J. Hall Moore.....	Richmond
Wisconsin.....	Charles C. Chittenden.....	Madison

Minutes of last session read and approved.

Committee on Codifying the Rules, Drs. Faught, Donnally and Parmele, reported.

RULES AND CONDITIONS FOR OBTAINING AND MAINTAINING RECOGNITION
OF DENTAL COLLEGES BY THE NATIONAL ASSOCIATION
OF DENTAL EXAMINERS.

1. A formal application for recognition shall be made by January 1, 1897, by each college now organized desiring such recognition; and colleges hereafter organized shall make such application within the three months next succeeding their organization. All such applications shall be made upon blanks to be obtained from the Committee on Colleges of this association, and shall answer in full all the questions contained in the same.

2. The preliminary requirements prescribed by the National Assembly of Dental Faculties must be accepted and carried out in good faith by the colleges recognized by the National Association of Dental Examiners, provided that the standard adopted by the National Association of Dental Faculties at Saratoga in 1896 is not lowered. Where such *certificate* as thus required cannot be presented from state school authorities by the applicant for matriculation, his or her qualifications shall be tested by an examination, conducted according to this standard, by prominent local educators, approved by a State Board of Dental Examiners for that purpose; none of the persons thus conducting the preliminary examination shall be members of the faculty of the college to which the application has been made.

3. The statements set forth in the application of any college for recognition shall be verified, after investigation, by the Board of Dental Examiners of the state in which the college is located, or by other persons designated by the National Association of Dental Examiners in case no such state board exists; and the recommendation of such board shall be essential to recognition.

4. The state boards in connection with this association are hereby required to become informed of the character of the dental colleges located in their respective states as to their equipment, facilities and methods of teaching, and shall report annually to this association wherein they fail to comply with these requirements; and any college which hinders or obstructs a proper investigation by the person or persons making such authorized investigation as may be necessary to carry out this rule shall, when reported to this association, be suspended from the list of recognized colleges until such hindrance or obstruction has been removed.

5. Attendance of students upon three full courses, of not less than six months duration each, in separate years, with three months' practical instruction intervening between the courses, shall be required before final examination for graduation, and candidates presenting for such examination shall be 21 years of age or more by October next succeeding this examination.

6. Each dental college to be on the list of recognized colleges must have a teaching faculty composed of at least eight individuals as follows, to-wit: at least three professors of dental subjects, covering the four branches of Operative Dentistry, Dental Prosthetics, Dental Pathology and Oral Surgery. For the six subjects in common with general medicine there must be at least five professors, covering the six branches of Anatomy, Physiology, Chemistry,

General Pathology (fundamentals), Materia Medica and Therapeutics and General Surgery. Their students must also be taught the subjects of Chemistry and Bacteriology in laboratories adapted to the purpose and under suitable instructors. That such special college must possess, in addition to suitable lecture-rooms, a well-appointed dental infirmary and a general prosthetic laboratory; also each college must be provided with facilities suitable for manual training in operative dentistry, and must furnish in this way systematic instruction to its students.

7. Final action shall not be taken on the application of any college until such college has been admitted to membership in the National Association of Dental Faculties.

8. No college shall be placed or continued on the list of recognized colleges which has connected with it, in any capacity whatever, a member of a State Board of Dental Examiners.

9. No college shall be in the list of recognized colleges which does not state, in its Annual Announcement, that it complies with the rules and conditions of the National Association of Dental Examiners.

10. These rules and conditions shall apply to all colleges, including those now on the recognized list as well as to those making application for such recognition.

WILLIAMS DONNALLY,
GEORGE L. PARMELE,
L. ASHLEY FAUGHT, Chairman.

Dr. Whitby moved the adoption of the same. Passed.

Drs. Meeker, Barlow and Adams spoke of having sent in their resignations as clinical instructors of the Baltimore College.

Dr. J. Hall Moore said he would resign from the same college and would request the dean to notice, in foot-mark, the reason of the resignations.

Dr. Donnally said he would resign from his position on the Washington (D. C.) College.

Dr. Waters asked for information as regards honorary members of the association holding positions in colleges.

President decided, not being a member of any state board, the resolution did not apply.

Special Committee on Report of President's Address referred to Committee on Colleges.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Your committee would report that the address of the President has been considered and the several suggestions have been referred to committees.

The principal subject mentioned is in regard to incompetent dental schools, and a suggestion is made that a committee be appointed to confer with a committee of the association of faculties.

We would recommend that this matter be referred to the Committee on Colleges. Respectfully submitted.

GEORGE EMERY ADAMS, } Committee.
 GEORGE L. PARMELE, }

Committee on Conference with the Association of Faculties said they were willing to consult at any period.

Secretary was ordered to notify the Faculties' Association.

Resolution offered by Dr. Barlow that the Committee on Colleges, in the new rules, send notice of the requirements to all the recognized and unrecognized colleges. Passed.

The State Board of California, through the Secretary, sent a notice just after the adjournment of the sessions at Asbury Park, in 1895—a letter of resignation from the association.

Dr. Donnally moved that the Secretary write to the California board if they would not withdraw the resignation. Passed.

Dr. Donnally offered the following resolution, which was passed:

Resolved, That this association take cognizance of the laborious efforts of Drs. Faught and Brown to do the work of the Committee on Colleges under great difficulties and embarrassments, and further that we tender these gentlemen a special vote of thanks.

The Treasurer offered a motion to remunerate "Servant No. 2" in the hotel to the amount of \$3 for services rendered.

The Committee on Colleges was ordered to continue its work for 1896-7.

Motion by Dr. J. Hall Moore to meet at the same place as the American Dental Association, the Friday prior to the meeting of the same (July 30, 10 a. m.). Carried.

No further business, the association adjourned, after thanks to the various officers.

CHARLES A. MEEKER,
 Secretary.

CALIFORNIA BOARD OF DENTAL EXAMINERS.

At a meeting held December 1 Dr. F. W. Bliss, of Santa Cruz, was elected President, and Dr. W. A. Moore, of Benicia, Secretary, of the California State Board of Dental Examiners.

W. A. MOORE, Sec'y.

MUCOUS MEMBRANES can be made anesthetic by oil of cinnamon (1 to 500).
 —*Therapeutic Gazette*.

News Summary.

MR. STEPHEN HEXTER, the genial Chicago agent for *Borolyptol*, has recently been married.

CREMATION IN ENGLAND.—The third crematory in England is now being built in Liverpool.—*Med. Record*.

TIME REQUIRED FOR DIGESTION.—The approximate time required by the human stomach for a mixed meal of bread, fruit and vegetables is three and a half hours.—*Medical Age*.

THE DIRTY SPONGE.—Professor Lang, of Vienna, declares that sponges, owing to the impossibility of destroying germs in them, have long since been banished from the surgeon's table, and should also be excluded from the bathroom and washstand.

STREET NOISES INJURIOUS TO HEALTH.—It is stated on the authority of prominent physicians that nervous disorders in New York City are on the increase. Unnecessary street noises are believed to be responsible in a great measure for this condition.—*Jour. Am. Med. Ass'n*.

THERE is no profession, I believe, which is paid less for the enormous amount of energy, physical, psychical and moral forces that are spent every day in our labor than dentistry, and if there is any profession that should not be practiced for God's sake, it is dentistry.—Dr. Hofheinz, in *Dental Cosmos*.

EYE STRAIN.—The long continuance of eye troubles may be the unsuspected source of insomnia, vertigo, nausea and general failure of health. In many cases the eye trouble becomes suddenly mischievous, owing to some failure of the general health, or to increased sensitiveness of the brain from moral or mental causes.—*The Medical Times and Hospital Gazette*.

TREATMENT OF WARTS.—Simple cutting off or severe cauterization of warts never prevents their return, but the trouble may be readily relieved by internal medication in most instances. Good results have been obtained by taking ten drops of tincture iodine thrice daily, but as a rule the best effects accrue from Fowler's solution, two drops thrice daily (in children, half a drop thrice daily), slightly increasing the dose each week. The warts crumble to pieces and disappear, especially when washing and drying the hands, so that the skin looks normal after two or three weeks.—*Medical Herald*.

THE PHYSIOLOGY OF NERVE.—Dr. Augustus Waller, F.R.S., pointed out that hitherto in investigating the results of stimuli applied to a nerve the answer was an indirect one transmitted through muscle or some other tissue. It had seemed to him better to put the question "How do you do"? directly to the nerve itself and get a direct answer. For this purpose the nerve connected with electrodes is placed in a glass gas-chamber, and the results of a succession of stimuli at minute intervals can be shown graphically as normal replies. On introducing certain vapors, as chloroform or ether, into the chamber the effect upon the nerve is easily seen, and the same holds good when the nerve

is bathed, say for one minute, in a solution of different salts. A series of lantern-slides demonstrated very well some of the results Dr. Waller has obtained with such tests. Thus it appeared that whilst ether only anesthetised the nerve and normal responses were afterwards resumed, in the case of chloroform the nerve was killed.—*Brit. Jour. Dent. Sc.*

STRONGLY PUT.—If you were to take an eminently practical boy and school him in the superficial, sentimental, emotional and dependent habits of the average girl, with the ordinary attendants of a corset, tight and high-heeled shoes, indoor training and insufficient clothing, and let him live on deoxygenated air, with no other hope except to get married, and not allow him to purchase even as much as a railroad ticket for himself, never have a pocket in his clothes, spend hours daily curling his hair and preparing to spend a frivolous evening, he would develop into a veritable hysterical nonentity, capable of producing only his kind.—LUCINDA H. CARR, in *America Journal of Surgery and Gynecology*.

FORTUNE IN A DEER'S TOOTH.—The old tale of "Eyes and No Eyes" told in the "Sandford and Merton" of a past generation, conveys a useful lesson. We all know how the two little boys went a walk together, and upon their return one had seen nothing worthy of remark, while the other was brimful of the most instructive observations and experiences couched in faultless diction. Whether "Professor" Dixon, a taxidermist of Kansas City, had perused this tale we do not know, but he certainly acted up to the moral conveyed by it. It seems that the Earl of Tankerville, while hunting in the wild west, shot a deer whose head he sent on to Dixon to be mounted. While the latter was preparing the head he noticed a yellow incrustation on the teeth which proved to be gold dust. He found out where the stag was shot, and examined the "licks" frequented by the deer in the neighborhood, and now we suppose he will become—as is generally the case in those journalistic stories—rich beyond the dreams of avarice.—*Brit. Jour. Dent. Sc.*

NON-ACTINIC RAYS AND SMALL-POX.—Not a few scoffs have been levelled at old John de Gaddesden, a physician of the fourteenth century, for his words concerning small-pox. "If you have small-pox," wrote he, "wrap yourself in scarlet cloth, and let your bed-hangings also be scarlet. This is an excellent cure. It was in this manner that I treated the son of the noble King of England, and I cured him without leaving any marks." It so happens that modern science has just vindicated the empirical wisdom of its professional ancestor. Dr. Finsen, of Copenhagen, has shown that it is the so-called chemical rays of the sun, and not the heat rays, which produce irritation of the skin, and that these rays can be intercepted by red glass, or by any other red medium. Experimenting from this basis, Dr. Finsen found, even as did Dr. de Gaddesden, that small-pox patients treated in rooms with red glass windows almost invariably recovered without pitting or marking.—*Medical Times*.

FOR SALE—Good practice, centrally located in one of the largest cities in the Mississippi Valley, at invoice price of residence and office furniture; no bonus; only those with \$1,000 cash need apply. Address FAILING HEALTH, care DENTAL DIGEST.

Obituary.

IN MEMORIAM.

The death of Dr. Carl Heitzman, from hypertrophy of the heart, will cause a surprise to many. The painful intelligence was cabled December 6 from Rome, Italy. He had been conscious of his disorder for some months



DR. CARL HEITZMAN.

and left New York in the early summer, believing that he had not long to live.

Dr. Heitzman was born October 2, 1836, in Hungary, and graduated from the University of Vienna in 1859. With Prof. Carl Wedl he produced in 1869 the great works, the Pathology of the Teeth and the Atlas of the Pathology of the Teeth. In 1873 Heitzman published his first discoveries on the structure of protoplasm and its reaction in the process of inflammation. He also wrote a very valuable work, the Descriptive and Topographical Anatomy,

which is still the leading text-book in all German colleges. He left Vienna in 1874 and arrived in New York City October 15 of that year. He opened a histological laboratory and Dr. Bodecker was the first dentist that entered it, July 6, 1877, followed by Atkinson, Abbott, ourself and others a few days later.

In 1878 fourteen dentists presented him with a fine microscope. The book, "Microscopical Morphology," was published in 1883. He has left a nearly completed work which will soon be published.

We have believed that we could put a few thoughts before our profession that would fitly express the conceded value of the late Dr. Heitzman's teachings. In the days to come a clearer view than it is possible now to get will be clearly shown by comparison of our knowledge before and after of microscopical teachings relating to the minute anatomy of the human tooth. To no man are we indirectly more indebted for the successful accomplishment of that which has afforded an opportunity to so many to become familiar at least with the variety of fields of study of the teeth than to our beloved Atkinson. Now we are no longer dependent upon outside talent; we are able to-day to cope successfully with the most noted scientists of the world. We personally were in the first class which was the result of the indomitable enthusiasm of Atkinson. When he had been introduced to the possible developments of Heitzman's laboratory by Dr. Bodecker, and had talked with Dr. Heitzman, his joy knew no bounds. We saw him then, like all true seekers after knowledge, sit at the feet of the master as humbly as a novice, although he was no novice in science, for he had a prevision of much that was to be revealed.

This cordial reception of Heitzman by such a thinker quickly produced a warm cordiality and mutual respect between them. From the start success was stamped upon these humble beginnings by dentists in the deeper things of science, and these men did more than we can yet appreciate to elevate our calling in the eyes of the older branches of science. It was not accorded to many to witness the last exhibition of Atkinson's devotion to Heitzman, which occurred at a meeting of the Odontological Society a few days previous to the former's demise, but if in nothing else, in that tribute Heitzman had ample reward.

As regards the published works of Dr. Heitzman, they are his monument to be tried by the tests of knowledge, and what is of truth will stand far more enduring than anything material. He had a grandeur of mental capacity that drew one marvelously into his atmosphere. Our two and a quarter years' tuition in his laboratory were among the most enjoyable of our professionable life. While we recognized the persistent Ego in our teacher and often rebelled under its sway, yet we somehow felt that it was worth while to submit to his all-powerful rule for the truth's sake. Dr. Heitzman's egotism and abrupt manner made him not a few enemies and lost him students, but many saw in him something larger and grander than his faults. We say this from conviction and out of gratitude for his benefits to us. While his critics have shown a somewhat italicized spirit, yet the day will surely come when the X-rays of the future will throw upon the screen of truthful history the accord of merit which he so richly deserves.

G. ALDEN MILLS.

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